

The Early History of the East Indian Railway

HENA MUKHERJEE



**FIRMA KLM PRIVATE LIMITED
CALCUTTA**

Published by

**Firma KLM Private Limited
257-B, B. B. Ganguly Street
Calcutta-700 012
INDIA**

First published 1960

Printed by

**Sreema Mudran
Sankar Kumar Dey
8B, Shibnarayan Das Lane,
Calcutta-700 006**

To My Husband

ABSTRACT

Amongst different aspects of the economic history of India, the least explored perhaps is the origin, growth and operation of her vast railway system. Compared to the amount of works on all these other aspects of India's economic history, literature on her railways is very limited. This limited number of works, again, are mainly concerned with the history of Indian railways as a whole and the histories of individual railways, each a potential subject in itself, thus remain yet to be written. The present book is an attempt at dealing with the history of one such individual railway, namely, the East Indian Railway. The history of its long career started in 1845 when the East Indian Railway Company projecting this railway was formed in London and this forms the starting point of our study also. From this year, we carry on our review until 1879, the year in which the entire undertaking, as authorised under the contract, was purchased by the Government. The construction of the different portions of this railway during this early period raised numerous problems. The initial problem was that of raising capital which was not immediately available in England nor was there any possibility of its being provided from India. Even after this initial difficulty was overcome, there were other problems—problems of securing labour and materials for the railway since none of these could be procured, generally speaking, from the local sources in India. How these difficulties were overcome and the railway was ultimately built, and what effects it had on the economic history of the area it served, are questions dealt with in this book. In treating our subject, we have not, of course, followed any strictly chronological order. All these different questions, such as finance, provision of labour, provision of materials and so on, are viewed in their individual perspectives and are treated in respective chapters and sections.

PREFACE

This book is based on my thesis approved for the Ph.D. degree of the University of London in 1966, parts of the thesis being already published in the form of articles and papers in some journals and books. The book deals with the provision of capital, materials and labour for the East Indian Railway, one of the earliest railway projects in India and the relevant discussions in the book reveal certain new truths relating to all these questions which, to a certain extent, refute the established notions regarding them. The book also contains a discussions on the effects of the East Indian Railway on the economy of the areas through which it passed in the early years of its operation and it brings into focus its very progressive role in initiating important developments in the economic life there and the conclusions arrived at in this respect, too, are original, shedding new light on the current historical approach to this question.

ABBREVIATIONS

AC/G	Records of the Accountant General's Department, India Office.
Beng. Rly. Cons.	Bengal Railway Consultations.
Beng. Adm. Rep.	Bengal Administration Report.
E.I.R.	East Indian Railway.
E.I. Rly. Co.	East Indian Railway Company.
Parl. Pap.	Parliamentary Papers.
Rly. Letts. Encl.	Railway Letters and Enclosures from Bengal and India.
Rly. Home Cors. 'A'	Railway Home Correspondence 'A'.
Rly. Home Cors. B'	Railway Home Correspondence 'B'.
Rly. Home Cors. 'C'	Railway Home Correspondence 'C'.
Rly. Des. Beng. Ind.	Railway Despatches to Bengal and India.
Sel. Govt. of India	Selections from the Records of the Government of India.
Sel. Govt. of Bengal	Selections from the Records of the Government of Bengal.

Modern Synonyms for certain names referred to in the book—

Adjai (River)—Ajoy

Behar—Bihar

Burrampooter—Brahmaputra

Callian—Kalyan ; Cawnpore-Kanpur

Dholepore—Dholpur

Hugli—Hooghly

Hurdwar—Haridwar

Jumna—Jamuna

Mirzapore—Mirzapur

Muttra—Mathura

Oude—Ayodhya

Sahebganj—Sahibganj

Santal Pergunnah—Santal Parganas

Saugar—Sagar

Singharron—Singreni

Soane—Son

Sohagpore—Sohagpur

CONTENTS

	Page
Abstract	vii
preface :	ix
Abbreviations	xi
Modern Synonyms for certain names referred to in the book	xii
Chapter I Introductory : The origin and the Early Development of the E.I.R. ..	
Chapter II Financial History of the E.I.R. : Problems of Capital Requirements, Profitability and Freight Policy. .	16
Section I Capital Requirements of the E.I.R. ..	16
Section II The Extent of the Profitability of the E.I.R. ; Its Rates and Fares ..	48
Chapter III Problem of Selection and Routing of the Line	60
Chapter IV Provision of land, organisation and personnel of the E.I.R. Co.	89
Section I Provision of Land	89
Section II Organisation and Personnel of the E.I.R.	101
Chapter V Construction of the E.I.R. : 1851- 1870	112
Chapter VI Effects	141
Conclusion	172
Appendices	175
Bibliography	181
INDEX	197



EAST INDIAN RAILWAY.

Outline Map of the Railway in Progress Between Delhi and Bangalore

The Proposed Extension to Allahabad

the Rajmahal, Banoolpore, and Bikaner

and Allahabad, Delhi, by the Delhi and the Delhi-Bombay line.

CHAPTER I

INTRODUCTORY : THE ORIGIN AND THE EARLY DEVELOPMENT OF THE E.I.R.

In this chapter, we propose to trace the origin and growth, within the period 1845-1879, of the railway system which under the name of the East Indian Railway,¹ forms the subject-matter of this book. In the early forties of the 19th century, a railway line serving the entire distance from Calcutta to Mirzapur in Upper India, and even beyond that, to Delhi, was the cherished dream of an isolated individual. But, by 1871, it was realized in the shape of the E.I.R. which, with different branches and extensions, served the entire Gangetic Valley. We shall note in this chapter the stages in this development, our object being primarily to trace in outline the different parts of that undertaking.

It was Rowland MacDonald Stephenson with whom the idea of the E.I.R. originated. Born in England in 1808, Stephenson witnessed the beginning of the railway age in that country in the 1820's and also saw its culmination in the period of "railway mania" in the mid-forties of that century.² Numerous projects were being made for railways both at home and abroad. By profession a civil engineer, Stephenson was easily affected by the spirit of the age and became a railway promoter. The country he chose for carrying out his project was India. This was probably due to the long association that his family had with that country.³

1. Mentioned henceforth as the E.I.R.
2. R. D. Baxter, 'Railway Extension and Its Results', *Journal of the Statistical Society*, vol. XXIX, (1866), reprinted in *Essays in Economic History*, edited by F.M. Carus-Wilson (London 1962), Vol. III, p. 33.
3. One of Stephenson's ancestors, Edward Stephenson, had been at the Mughal Court early in the eighteenth century, with the object of securing certain commercial concessions in favour of the East India Company's trade in India. Two of his own brothers were in the service of the East India Company. c.f. D. Thorner, *Investment in Empire, British Railway and Steam Shipping Enterprise in India 1825-1849*, (Philadelphia 1950), pp. 45-46; also footnote No. 2 in p. 64.

The idea of the construction of a railway had occurred to Stephenson as early as 1841. Having, at the back of his mind, a possible railway line from Calcutta to Burdwan, Stephenson had gone to India to collect information as regards the availability of land, timber and skilled labour in the neighbouring areas where the railway was to be built.⁴ He was in communication with J. Erskine, an European owner of coal mines in areas close to the river Ajay with the object of securing information as to the existing traffic in goods and passengers to and from Burdwan.⁵ He also discussed with Joseph Locke, the eminent civil engineer in England in those days, about the practicability, both from engineering and commercial points of view, of a railway line stretching from Calcutta to Benares and Delhi.⁶ He also went to the extent of referring the matter informally to the East India Company's Court of Directors in London, which rejected the whole proposal as a "wild project".⁷

In 1844, Stephenson was in India again in connection with his railway project. This time he made a formal approach to the Government of Bengal. In two successive letters to that authority, he spoke of the construction of a line of railway in the province. The concessions he asked for from the Government for the Company to be formed for the purpose of building the railway, included a charter or an act of incorporation which would entitle it to purchase the land required for the projected railway under the sanction of the Regulation I of 1824.⁸ The undertaking was to remain under the direct control of the Government which would appoint either a certain proportion of the

4. R. M. Stephenson *Report upon the Practicability and Advantages of Introduction of Railways into British India* (London 1844), pp. 46-47, attached to Railway Home Correspondence (abb. Rly. Home Corrs.), 'A', Vol. I.

5. Replies of J. Erskine to enquiries regarding the trade of Burdwan in 1841, Stephenson's *Report etc. op. cit.* p. 47.

6. Copy of Joseph Locke's letter dated 22 Feb. 1841, Stephenson's *Report etc., op. cit.* pp. 58-59.

7. Minutes of evidence taken before the Select Committee on East India (Rlys), *Parliamentary Papers*, (abb. *Parl. Pap.*), House of Commons (abb. H.C.) 1857-58, XIV (416), p. 51, Q. 3829.

8. Stephenson to J.F. Halliday, Sec. to Govt. of Bengal, 20 July 1844, Stephenson's *Report etc., op. cit.* p. 18.

directors of the prospective company⁹ or a superintending committee.¹⁰ Emphasising the importance of the undertaking, Stephenson wrote—"That the subject is one of paramount importance to the best interests of the country, and calculated in a military as well as a commercial point of view to be productive of the most beneficial results, it will, I apprehend, be unnecessary for me to demonstrate."¹¹ The Government of Bengal, handicapped as it was, in its ever-expanding administrative and military duties due to insufficient means of communication in the country, did not fail to realise the importance of the project proposed by Stephenson and showed a keen interest in it by assuring Stephenson of its readiness to grant the concessions he asked for in favour of a well-constituted company.¹² Stephenson also approached high government officials like Captain A. S. Waugh, Surveyor General of India, Captain Goodwyn, Garrison Engineer and Civil Architect of Fort William, W. Green, Secretary to Military Board and E. Wilkinson, Supervisor of Customs. He wrote letters also to the principal mercantile houses of Calcutta and to some of the influential local residents. The object of all these communications was to collect information about the existing traffic in goods and passengers in the Bengal Presidency. With one or two exceptions, the response from almost all these people was encouraging specially in respect of the line of railway in Northern India as suggested by Stephenson.¹³

On the basis of fairly enthusiastic support in India, Stephenson, on his return to England towards the end of the year 1844, made a proposal to the Court of Directors for building a railway line from Calcutta to the Burdwan coal districts.¹⁴ He put

9. Stephenson to Halliday, 15 July 1844, Stephenson's *Report* etc., *op. cit.* pp. 17-18.
10. Stephenson to Halliday, 20 July 1844, Stephenson's *Report* etc., *op. cit.* p. 18.
11. Stephenson to Halliday, 15 July 1844, Stephenson's *Report* etc., *op. cit.* p. 17.
12. C. Beadon, Und. Sec to Govt. of Bengal, to Stephenson, 8 August 1844, Stephenson's *Report* etc., *op. cit.* pp. 18-19.
13. All these letters are printed in Stephenson's *Report* etc., *op. cit.* pp. 19-45.
14. Stephenson to J. C. Melvill, Sec. to Court of Directors (mentioned henceforth as Court), 13 Dec. 1844, Rly. Home Corrs., 'A', Vol. I.

His observations on the practicability of a railway line in Bengal in the form of a printed report and appended to it all the correspondence that he made in India on the subject. The object of Stephenson's activities in India in 1843-44 thus seems to have been, as it has been pointed out by Daniel Thorner,¹⁵ to draw support for his project from the responsible local authorities which, he knew, would give weight to it in the eyes of the Court of Directors. The way Stephenson acted proved how farsighted he was. Money, men and machinery for the projected railway were to come, almost entirely, from England and so, it was considered more convenient to put it under the management of a London Board of Directors. Incidentally, Stephenson's proposal was the first railway project submitted formally for the consideration of the Court of Directors,¹⁶ and this was closely followed by one from the Great Indian Peninsular Railway Company.¹⁷

The Court of Directors, though not rejecting the proposals outright as they had previously done in 1841 when Stephenson had made his informal approach to them, proceeded slowly and cautiously. Before coming to any final decision as regards these particular proposals, they wanted the whole question of the practicability of railways in India, both from the engineering and commercial points of view, to be thoroughly investigated on the spot by some eminent engineers, one of whom was to be sent from England. An investigation along these lines they considered to be most essential because of the supposed engineering difficulties in the way of the successful construction and working of railways in India—difficulties which, it was believed, arose mainly from the climatic conditions there.¹⁸ The report of these engineers, again, was to be thoroughly examined and commented upon by the Government of India. If the opinion of all these authorities was favourable, the Court was prepared to give its sanction to the construction of a short, experimental line. Further extensions were to follow only on the success of this ini-

15. Thorner, *op. cit.* p. 55.

16. Report from the Select Committee (abb. Sel. Com.) on East India (Rlys), 13 July 1858, *Parl. Pap.* (H.C.), 1857-58, XIV, (416), p. iii.

17. *Ibid.*

18. *Infra*, Chap. II, pp. 18-21.

tial venture. Thus, the railway despatch of the Court of Directors of 7 May 1845 to the Government of India, which was the first of its kind, contained detailed and emphatic instructions on all these points.¹⁹

The attitude of the Court of Directors was perhaps not entirely unreasonable under the circumstances. Apart from the question of general pessimism that prevailed in England at that time about the prospects of railways in India and also the question of risk that might devolve on the Court under the financial arrangement proposed by the Railway Companies,²⁰ we have to remember here that railways were a new invention in those days and the conditions in India, because of the vast distance to that country, entailing a journey of more than a month in the slow-moving steam-vessels of the time, were not very familiar in England. These difficulties perhaps justified the Court's insistence on a thorough examination of the whole problem. The Court was, of course, very eloquent about the importance of railways generally in the political, economic and social life of a country and went to the extent of stating,—“It cannot admit of question, that wherever rail-road communication can be advantageously introduced and maintained, it is eminently deserving of encouragement and co-operation from the Government”.²¹ Furthermore, they definitely stated that if the railways were at all found to be practicable in India, they were to be constructed and managed, as in England, by private railway companies.²²

The response from the Court of Directors was thus qualified. Still, it was in sharp contrast with their earlier cold indifference and it is, of course, difficult to find any reason for this change of attitude on their part. However, even this response from the Court must have been greatly encouraging to Stephenson and his collaborators in England—men like Sir George Larpent and B. D. Colvin who were connected with some of the notable East

19. Court to Gov. Gen.-in-Counc., 7 May 1845, Legislative Dept., (abb. Legis. Dept.) No. 11, *Parl Pap.* (H.C.) 1845, XXXIV, (327) pp. 1-3.

20. *Infra*, Chap. II, pp. 21-26.

21. Court to Gov. Gen.-in-Counc., 7 May 1845, (Legis. Dept. No. 11), *Parl. Pap.*, (H.C.), 1845, XXXIV, (327), pp. 1-3.

22. *Ibid.*, p. 2.

India firms of the day.²³ They had already worked out a plan and were proceeding accordingly. The main feature of the plan was the formation of a railway company in England and the deputation of a special agency to India. The task of the latter was to be the formation of a local committee there, which would communicate with the provincial government in India on the proposed railway line. The plan also took into account the appointment and despatch to India of a sufficient number of experienced railway surveyors and engineers who would be responsible for the detailed surveys and the initial construction work as soon as the consent of the Government of India to the railway construction had been obtained.²⁴

The railway company was established by a deed of settlement dated 1 June 1845. The indenture states that it was a co-partnership under the name of the "East India Railway Company".²⁵ The capital stock of the Company was to be £4,000,000 divided into 16,000 shares of £250 each, or the East India Company's rupees 2,500. The directors of the Company were empowered by the indenture to increase the capital stock from £4,000,000 to £5,000,000, to be raised in shares of the same value.²⁶ In a letter to the Court of Directors, the formation of the railway company was announced.²⁷ The directors of the Company were stated to be in a position to place themselves in communication with the Court on the subject.²⁸ The Government of India²⁹ and the Government of Bengal³⁰ also were informed.

23. Thorner, *op. cit.* p. 52.

24. Larpent and Stephenson to Melvill, 28 Jan. 1845, Rly. Home Corrs., 'A', Vol. I.

25. The name of the railway company subsequently became "East Indian Railway Company (abb. E.I. Rly. Co.). The exact time when this change from 'India' to 'Indian' was made, we are unable to trace.

26. Draft of Indenture, 1 June 1845, Rly. Home Corrs., 'A', Vol. I.

27. Larpent, Stephenson and Colvin to Melvill, 10 June 1845, Rly. Home Corrs., 'A', Vol. I.

28. *Ibid.*

29. Larpent, Stephenson and Colvin to Hardings, the Gov. Gen. of India, 7 July 1845, Rly. Home Corrs., 'A', Vol. I.

30. Stephenson to Halliday, 4 Sept. 1845, Bengal Railway Consultations (abb. Beng. Rly. Cons.), 10 Sept. 1845, No. 1 Range 163, Vol. XV.

The newly-formed Company lost no time in despatching the intended agency to India. Stephenson was chosen to act as the Managing Director of the Company and also its agent in India. Having started from England in July 1845, Stephenson arrived in Calcutta in the first week of September.³¹ By this time, the names of the men who were to serve on the local committee of the railway company in India were also forwarded.³² The entire cold season lay ahead and Stephenson and the party of engineers and surveyors who accompanied him from England, made the best use of it by making extensive surveys of the trade and traffic of the entire region from Calcutta to Delhi and also of its physical conditions.³³

At the Government level also, there were much activities at this period. In the same ship with Stephenson, there had arrived in Calcutta from England T. W. Simms, an engineer of considerable fame and ability, who was selected by the Court of Directors to remain in charge of the proposed investigation regarding the practicability of railways in India.³⁴ Captain Boileau and Captain Western of the Bengal Engineers had already been selected by the Government of Bengal to act with Simms.³⁵ These three men formed a commission which commenced its duties by examining different areas in the country with the object of ascertaining the suitability of railways there. Burdwan was chosen to be the first locality to be examined where Simms and Western paid an early visit. Any railway passing through this area, it was feared, would be subject to the injurious effects of the annual floods of the river Damodar³⁶ and the purpose of the visit was mainly to ascertain the extent of these effects.³⁷

31. Thorner, *op. cit.* p. 72.

32. Stephenson to the local committee (at Calcutta), 2 June 1845, Railway Letters and Enclosures from Bengal and India (abb. Rly. Letts. Encl.), Vol. I.

33. Stephenson to I. Thornton, Sec to Govt. of N. W. Provinces 17 Jan. 1846, encl. to the latter's letter to G. Busby, Sec. to Govt. of India, 24 Jan. 1846, *ibid.*

34. Melvill to the Acting Chief Sec. to Govt. of India, 24 June 1845 Beng. Rly. Cons. 3 Sept. 1845, No. 5, Range 163, Vol. XV.

35. Military Board to Govt. of Bengal, 29 August 1845, Beng. Rly Cons. 3 Sept. 1845, No. 7, Range 163, Vol. XV.

36. *Infra*, Chap. III, pp. 78-79.

37. T. H. Maddock, Deputy Govr. of Bengal, to Court, 4 Oct. 1845, paras 9 and 10. Rly. Letts. Encl., Vol. I.

But, the intended examination could not be carried out since the flood water of that season had not subsided as yet.³⁸ Simms and Western next examined the areas between Calcutta and Bhagwangola.³⁹ Simms also travelled over the entire region from Calcutta to the Western-most boundary of the British territories in India, then fixed at the river Sutlej.⁴⁰

The results of these investigations were subsequently put in the form of a report, signed by Simms, Western and Boileau, which stated that railways were practicable in India. It stated, ".....railroads are not inapplicable to the peculiarities and circumstances of India, but with proper attention can be constructed and maintained as perfectly as in any part of Europe".⁴¹ While admitting that there were certain engineering difficulties to the successful construction and working of railways in India, the report suggested how they were to be overcome.⁴² The views expressed in this report received wide support in the official circles in India.⁴³ By the middle of 1846, this report of the railway commission, along with the opinions of the Government of India, as desired by the Court of Directors, were despatched to London.⁴⁴

Throughout this period, the Board of Directors of the E.I. Rly. Co. in London, remained on the alert, following closely the course of events in India. As soon as information had reached England that Simms had expressed a favourable opinion

38. T. H. Maddock, Deputy Govr. of Bengal, to Court, 4 Oct. 1845, paras 9 and 10. Rly. Letts. Encl., Vol. I.

39. Simms to Halliday, 17 Nov. 1845, Beng. Rly. Cons., 19 Nov. 1845, No. 1, Range 163, Vol. XV.

40. Simms to Colonel Stuart, Military Secretary to Govt. with the Govr. Gen., 25 Feb. 1846, Beng. Rly. Cons., 11 March 1846, No. 1, Range 163, Vol. XV.

41. Report of the Railway Commission, 13 March 1846, para. 2, Beng. Rly. Cons., 25 March 1846, No. 6, Range 163, Vol. XV.

42. *Ibid.* para 4.

43. The minutes of Hardinge, Maddock and other members of the Council, all appended to the Govt. of India's despatch to the Court of Directors, 9 May 1846, *Parl. Pap.* (H.C.), 1847, XLI, (68), pp. 13-24.

44. *Ibid.*, para. 4.

regarding the practicability of railways in India in a preliminary memorandum dated 12 September 1845,⁴⁵ the London Office of the E.I. Rly. Co. lost no time in informing the Court of Directors of their readiness to start work and they proposed the immediate discussion of terms.⁴⁶ With the object of making the final arrangements between the Court of Directors and the Railway Company, Stephenson returned to London in the middle of 1846 and another reminder on the subject was given to the Court of Directors.⁴⁷ In a subsequent communication, more distinct proposals were made.⁴⁸

But it was not before February 1847, i.e., about two years later since Stephenson had made his proposal that the reply from the Court was received and then, again, the terms they proposed, particularly the limitation of the guarantee to a certain number of years, were not acceptable to the Railway Company. Some sort of agreement was arrived at in September 1847. But, no sooner had it been settled than England was in the grip of a widespread financial crisis which prevented the Railway Company from fulfilling the financial requirements under that agreement. Negotiations dragged on for another two years during the course of which the Railway Company was insistent on having more liberal terms and the Court of Directors were resolutely opposed to that. The agreement was finally signed between these two parties on 19 August 1849. Under the terms of the contract, the Railway Company undertook to construct a short, experimental line at an average expense of £1,000,000.⁴⁹ The E.I. Rly. Co. was not alone in facing this delay caused first by the dilatoriness of the Court and secondly by the financial and commercial crisis in Britain. The agreement with the Great Indian Peninsular Railway Company was also deferred until this time because of very similar circumstances as in the case of the E.I. Rly. Co. This was now signed under which that Railway

45. Simms' Memorandum, 12 Sept. 1845, Beng. Rly. Cons., 17 Sept. 1845, No 4, Range 163, Vol. XV.

46. Larpent to Melvill, 17 Nov. 1845, Rly. Home Corrs. 'A', Vol. I.

47. D.I. Noad, Sec. to the E.I. Rly. Co., to Melvill, 5 June 1846, Rly. Home Corrs., 'A', Vol. I.

48. Minutes of Evidence taken before the Sel. Com. on East India (Rlys), 1858, *Parl. Pap.* (H.C.), 1857-58, XIV, (416), p. 24, Q 330.

49. For details of these negotiations see *infra*, Chap. II, pp. 21-29.

Company was to construct a short, experimental line from Bombay to Callian.⁵⁰

The loss of time during the course of these early negotiations for railways in India had been the subject of adverse criticism.⁵¹ As we have just referred to, the Court of Directors took about two years to write a reply to the proposal of the E.I. Rly. Co. A greater promptitude on their part might have resulted in an earlier agreement with the Railway Company and this might have enabled it to evade the financial crisis from 1847 onward. This financial crisis further delayed the whole proceeding, and as we shall see later on, it was not before 1851 that the work of construction was actually started in India.⁵² The injurious effects of this early delay in the negotiations for railways in India were felt in 1857. The outbreak of the Mutiny during that year showed once more the need for rapid and improved means of transport in India and the still unfinished railway projects in different parts of the country including the E.I.R. and the Great Indian Peninsular Railway, the negotiations for which had begun as early as 1844, naturally evoked criticism. The Select Committee appointed in 1858 to explore the causes of the delay in the railway construction in India, referred in its report to the loss of "valuable time" in the "preliminary negotiations for the introduction of railway enterprise in India ;"⁵³

A deeper probe into the circumstances of the whole affair brings out two things. The first of these is that there was definitely a lack of that promptitude and seriousness, on the part of the Court of Directors which the importance of the subject demanded of them. It is not wholly accountable why they should take two years to draft their first reply to the Railway Company's proposal. The delay of the first one year was perhaps unavoidable. They spoke of a thorough on-the-spot investigation in their despatch of 7 May 1845 and this was essential under the circumstances as we have noted above. It was then believed

50. Financial Letter to India (abb. Fin. Lr. to), 14 Nov. 1849, No. 27, Rly. Des. Beng. Ind., Vol. I, p. 3. 7

51. Report from the Sel. Com. on East India (Rlys), 13 July 1858, *Parl. Pap.* (H.C.), 1857-58, XIV, (416), p. vi.

52. *Infra*, Chap. V, p. 113.

53. Report from the Sel. Com. on East India (Rlys), 13 July 1858, *Parl. Pap.* (H.C.), 1857-58, XIV, (416), p. vi.

that this kind of investigation, which involved a considerable amount of outdoor work, could be undertaken by the Europeans in India only during the cold season, i.e., from the end of September to early March. Even if there was the least possible delay on the part of the official authorities in London in considering the proposal submitted by Stephenson in December 1844, the time was too short, at least half of the winter season being over in India and the voyage of the engineer to be sent there from England taking at least another month, for completing the proposed investigation and the greater possibility was that it could not be commenced at all. So, there was no other option but to wait until the next winter, i.e., the winter of 1845-46.

But the time that was wasted after Simms had gone to India in September 1845 and had started his activities there, is hardly justifiable. By November of that year, Simms' views were known in London⁵⁴ and the report of the railway commission, sent along with the Government of India's despatch dated 9 May 1846, must have arrived there by July 1846, if not earlier. In spite of this, it was not until December 1846 that the Court of Directors submitted to the Board of Control, for their approval, the terms and conditions on which the agreements with the prospective railway companies in India should be made.⁵⁵ A greater promptitude on the part of the Court of Directors in deciding these terms and conditions, might have enabled them to avoid the delay at least at this stage of the negotiations.

Secondly, delay also resulted from the controversy that went on between the Court of Directors and the Board of Control over the terms that should be forwarded to the railway companies. We would see in our chapter on finance that during the period from December 1846 to September 1847, this struggle went on when the Court was anxious to grant more liberal concessions to the railway companies than the Board was prepared to accept. The struggle can be interpreted to some extent as the result of the dualism which characterised the entire administrative set-up for India during this period. Authority was divided, in the first instance, between the home government and the local government in India and more injurious than this, at home,

54. Larpent to Melvill, 17 Nov. 1845, Rly. Home Corrs., 'A', Vol. I.

55. Minutes of Evidence taken before the Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 2, Q. 15.

again, between the Court of Directors of the East India Company, enjoying the prerogative of patronage and the right of initiation, and the Board of Control, representing the Crown's Government and possessing great powers of supervision and control over the former under Pitt's Act of 1784. Curzon speaks of the "Homeric contests between the Court of Directors and the Government as represented by the Board of Control" in England for nearly three-quarters of a century.⁵⁶ In the present context, this was partly the case, if not wholly. The Board's opposition to granting liberal terms to the railway companies operating in India was in tune with the general pessimism that persisted in England about the prospects of railways in India.⁵⁷ But, still, since the Court was prepared to grant them, though they were also initially not very optimistic about the possibilities of such projects and since these were agreed to, after two years' deliberations on the subject, during which period a thorough investigation of the question was made in India, the Board's opposition does not seem to be fully justified.

Apart from delay, the lack of sympathy on the part of the official authorities in London in considering these original proposals for railways in India might be another point of criticism here. In dealing with the financial handicaps of the E.I. Rly. Co. during the commercial crisis in England from 1847 onward, the Court of Directors, obviously with the approval and under the direction of the Board of Control, acted in a most unsympathetic manner and thereby they proved themselves rather indifferent to the whole cause of the railways in India. This part of the story belongs to the history of the financial aspect of the Railway Company and accordingly, is stated in the relevant chapter.

In sharp contrast with this rather indifferent attitude of the government authorities in London, we should note the persistent zeal and sincerity of the E.I. Rly. Co. The proposal initially came from them and the promoters showed great patience and perseverance in keeping the entire negotiations alive. Throughout the period when there was no response from the Court of Directors, they went on insisting, in successive letters, the need

56. Lord Curzon, *British Government in India* (London 1925), Vol. II, p. 67.

57. *Infra*, Chap. II, pp. 18-21.

for the railway line they had proposed. It is apparent that the main spirit behind this organisation was Stephenson whose energy, enthusiasm and foresight helped the negotiations to conclude successfully. It is true that Stephenson's work as the agent of the Railway Company did not always meet the government approval. Thus, the delay in the works in the section between Benares and Allahabad in 1857 led to some reflections on Stephenson's conduct which were regarded as matters of "serious moment" by the Court of Directors.⁵⁸ In 1854, Stephenson's contract for the construction of the greater part of the line from Burdwan to Delhi was not approved by the Board of Directors of the Railway Company itself and the legality of his action was called into question.⁵⁹ But, still, his services to the development and progress of Indian railways has been admitted by all concerned with this aspect of the history of India. Stephenson has been rightly called "the outstanding pioneer of Indian railways".⁶⁰ R. W. Crawford, the chairman of the E.I. Rly. Co., referred in 1856 to "the untiring energy, zeal and assiduity with which he [Stephenson] has devoted himself to the furtherance of this Company's interests in the prosecution of the great object of the best years of his life".⁶¹ Lord Dalhousie, in one of his minutes in April 1853, appreciated Stephenson's "knowledge and practice in Indian railway affairs".⁶²

Thus, in 1849, the first contract was signed between the East India Company and the E.I. Rly. Co. for the construction of a short, experimental line and the route that was ultimately selected for it covered the distance of 121 miles between Howrah to Raniganj via Burdwan.⁶³ The operations of the E.I. Rly. Co. remained confined to this portion only for a considerable period of time. In fact, in these early years, in tune with the cautious policy enunciated in the Court's despatch of 7 May

58. Financial (Railway) Despatch of the Court of Directors to the Governor General-in-Council [Abb Fin. (Rly.) Des. to], 8 July, 1857, No. 30, Rly. Des. Beng. Ind., Vol. II, p. 103.

59. Noad to Melvill, 5 July 1855, Rly. Home Corrs., 'A', Vol. IX.

60. Thorner, *op. cit.* p. 45.

61. R. W. Crawford to Melvill, 30 Sept. 1856, *Parl. Pap.* (H.C.), 1867, L. (173), p. 7.

62. Dalhousie's Minute, 20 April 1853, *Parl. Pap.* (H.C.), 1852-53, LXXVI, (787), p. 140.

63. *Infra*, Chap. III, p. 74.

1845⁶⁴ and also because of the scarcity of capital in the English money market, decisions for the extension of the line sanctioned in 1849 were being shelved.⁶⁵ Nevertheless, the idea of such extension was being discussed since 1851.⁶⁶ In December 1851, the survey of a new section from some point on the experimental line to Rajmahal on the Ganges was being made⁶⁷ and about the same time, decision was taken for extending the survey up the valley of that river as far as possible.⁶⁸ In September 1852, the Court sanctioned the construction of the Rajmahal extension.⁶⁹ In the following December, they were contemplating the simultaneous construction of a section or sections in the Upper Provinces as well as part of the scheme undertaken in Bengal, "so that India may without unnecessary loss of time possess the immense advantage of a regular and well-devised system of railway communication".⁷⁰ In April 1853, Dalhousie stressed the need and practicability of such an extension.⁷¹ It was in 1854 that decision was finally taken for the construction of the entire length between some convenient point on the experimental line and Delhi via Rajmahal and the relevant contract was signed between the East India Company and the E.I. Rly. Co. on 15 February 1854.⁷²

The next important land-mark in the history of the development of the railway system under discussion was the contract signed between the above-mentioned parties on 21 April 1858 for the construction of a branch line from either Mirzapur or Allahabad on the main line to Jubbulpore where it was to meet

64. *Supra*, pp. 4-5.

65. *Infra*. Chap. II, pp. 18-26.

66. Fin. (Rly.) Des. to, 21 Dec. 1852, No. 67, Rly. Des. Beng. Ind., Vol. I, p. 223.

67. W. E. Baker, The Constg. Engr. to the Govt. of India, to Stephenson, 25 Dec. 1851, Rly. Home Corrs., 'A', Vol. IV.

68. *Ibid*.

69. Fin. (Rly.) Des. to, 21 Dec. 1852, No. 67, Rly. Des. Beng. Ind., Vol. I, p. 223.

70. *Ibid*.

71. Dalhousie's Minute, 20 April, 1853, *Parl. Pap.* (H.C.), 1852-53, LXXVI, (787), pp. 115-116.

72. Text of the Contract between the East India Company and the E.I. Rly. Co., 15 Feb 1854, *Parl. Pap.* (H.C.), 1859, XIX, (259), p. 13.

the Great Indian Peninsular Railway—the trunk line of railway in the Bombay Presidency.⁷³ This line might be described as the first step towards giving shape to Dalhousie's dream of a general system of railways in India⁷⁴ and thus helping the growth of a unified political, economic and social life in India. The length of this branch was to be 225 miles.⁷⁵

The Chord line, which was the last major extension of the E.I.R. within our period, was sanctioned in 1867.⁷⁶ The total length of the line was 124 miles and it was to extend from Seetarampore on the colliery branch⁷⁷ to Luckeesarai on the main line.⁷⁸

This was how the E.I.R. originated and developed into the principal railway system of Northern India in the seventies of the nineteenth century. This railway system, introducing steam locomotion in the area, had a dominant role in moulding its political, economic and social life in the years to come. The story of its development in its manifold aspects, finance, the selection of the lines, the land and labour questions, the actual construction, in addition to the effects that it had on the various aspects of the economic life in India, is one of the leading features of the economic history of India in the nineteenth century. In the following chapters, we would attempt to describe these various stages in the construction of the E.I.R.

73. Text of the Contract between the East India Company and the E.I. Rly. Co., 21 April 1858, *Parl. Pap.* (H.C.), 1859, XIX, (259), p. 34.

74. Dalhousie's Minute, 20 April 1853, *Parl. Pap.* (H.C.), 1852-53, LXXVI, (787), p. 120.

75. Report to the Sec. of State for India in Council on Rlys in India for 1861-62, *Parl. Pap.* (H.C.), 1862, XL, (3009), p. 3.

76. Govt. of India to the Sec. of State, 14 June 1867 (P.W. Dept. Rly. No. 60), Rly. Letts. Encl., Vol. XXVII.

77. Since the extension to the North Western Provinces (abb. N. W. Provinces) was decided, the portion of the experimental line west of Burdwan came to be known as the colliery branch. Several extensions of this branch were made from time to time. *Infra*, Chap. VI.

Report to the Sec. of State for India in Council on Rlys in India for 1865-66, *Parl. Pap.*, (H.C.), 1866, LII, (3696), p. 4.

CHAPTER II

FINANCIAL HISTORY OF THE E.I.R.: PROBLEMS OF CAPITAL REQUIREMENTS, PROFITABILITY AND FREIGHT POLICY

The object of this chapter is to study the financial history of the E.I.R. until the year 1879. As we have seen, it was in this year that the entire undertaking was finally purchased by the Government of India,¹ after which the period of the investment of private capital as regards this undertaking was over. In two respective sections, we would discuss two broad questions, namely, how the undertaking was financed in the first place, and secondly, what was the extent of its profitability from the commercial point of view. This latter question, again, was related to some extent to the rates and fares fixed for the line.

SECTION I

Capital Requirements of the E.I.R.

All the early projects for railways in India—of which the E.I.R. was one, were financed almost entirely by British private capital. The Industrial Revolution created surplus capital in the English money market, which, supported by massive and world-wide foreign trade was always seeking some lucrative employment since the early decades of the nineteenth century. Construction of railways, again, was one of the most important achievements of the Industrial Revolution and the expanding railways, both at home and other known countries on the continent were attracting the surplus English capital to an increasing extent during this period. Numerous companies cropped up with many projects for railways in all these countries, and there was an out-pouring of mass investment in them.² The period from 1844 to 1847, was one of "railway mania" in England—

1. *Supra*, Abstract.

2. L. H. Jenks, *Migration of British Capital to 1875*, 3rd. ed. (London 1963), pp. 131-132.

a period of great excitement and widespread speculation in railway securities.³ The widespread character of the railway speculation in England during this period was described in the following language in a contemporary issue of the *Economist*—"Railway property is a new feature in our social economy, which introduces commercial feelings to the fire-sides of thousands and of whole classes who before had little or no sympathy with the material condition of the country."⁴ To quote from Thomas Tooke—"In every street of every town, persons were to be found who were holders of railway shares. Elderly men and women of small realised fortunes, tradesmen of every order, pensioners, public functionaries, professional men, merchants, country gentlemen—the mania had affected all ;"⁵ In 1844, the actual capitalisation in English railways was more than £72,000,000. In 1847, it rose to more than £166,000,000.⁶ A large amount of British capital was being invested in the continental railways—specially French and Belgian railways. French railway securities were in high demand in the London Stock Exchange. In March 1845, one company seeking permission to build the railway line to the northern frontier of France—which came to be known as the "Nord" railway—received in London alone applications for 400,000 shares while they had only 150,000 to sell.⁷ In Belgium, the railway history started with the state construction, but no opposition was ever shown to private enterprise. In the mid-forties, English capital was playing an important role in the railway development of that country.⁸

As part of these developments, proposals were also made for railways in different British possessions overseas—in Canada, Trinidad, Ceylon and India. But one distinctive feature of all these proposals was that the promoters in every case asked for

3. *Supra*, Chap. I, p. 1.

4. *Economist* (London) 5 April 1845, p. 310.

5. T. Tooke and W. Newmarch, *A History of Prices and of the State of the Circulation, during the Nine Years 1848-1856*, (London 1857), Vol. V, p. 234.

6. Jenks, *op. cit.*, p. 129.

7. Jenks, *op. cit.*, p. 145.

8. J. H. Clapham, *The Economic Development of France and Germany, 1815-1915*, (London 1945), pp. 141-143.

a government guarantee to secure a definite rate of dividend. Different companies willing to undertake railway construction in Canada were striving hard during this period for this kind of guarantee from the British Government.⁹ In March 1847, the Trinidad Railway Company asked for a guarantee of an annual dividend of 5%, payable half-yearly, upon the amount of capital expended, not exceeding £300,000.¹⁰ About a month later, almost a similar proposal came from the Ceylon Railway Company, i.e., asking for a guaranteed dividend of 5% per annum on the capital for the time being paid up.¹¹ Both the E.I. Rly. Co. and the Great Indian Peninsular Railway Company—which made proposals for railway construction in India during this period—had made similar demands for guaranteed dividend. Stephenson's original proposal was for a 4% guaranteed dividend on the capital to be invested in the building of a line of railway from Calcutta to the Burdwan coal districts on the Mirzapur road.¹² In a subsequent communication, the guarantee was reduced to 3%.¹³ The reason for such a demand was that the investing public in England were generally aloof to such distant undertakings when the projects at home and the neighbouring known countries offered to them much safer channels of investment. Conditions in those distant countries were unknown to them and they were not in a position to judge the merits of the projects forwarded.¹⁴ Under such circumstances, the guaranteed dividend might attract capital which would otherwise have been employed either at home or on the continent.

As far as India was concerned, this kind of indifference to railway projects there, was gradually being replaced, one might say, by a positive distrust in their possibilities as the negotia-

9. Jenks, *op. cit.*, p. 199.

10. John Rae Reid, Chairman of the Trinidad Railway Company to B. Hawes, Und. Sec. of State for War and Colonies, 17 March 1847, Rly. Home Corrs., 'A', Vol. I.

11. John Stewart, Deputy Chairman of the Ceylon Railway Company, to Earl Grey, Sec. of State for War and Colonies, 15 April 1847, *ibid.*

12. Stephenson to Melvill, 13 Dec. 1844, *ibid.*

13. Stephenson and Larpent to Melvill, 30 Dec. 1844, *ibid.*

14. Jenks, *op. cit.*, p. 194.

tions for them were progressing. The Court of Directors in their first despatch on the subject of railways in India dated 7 May 1845 wrote that over and above the difficulties common to railroads in all countries, India presented some peculiar problems which might prove to be a serious obstacle to the successful construction and working of the railways there. The climate with its monsoon rains and inundations, violent winds and tropical sun, was one problem new to railway engineers in Europe ; the ravages of insects and vermin upon timber and earth and brick-works, might be another. Then there was the danger of the railways passing through unenclosed and unprotected tracts of country. The difficulty and expense of securing the services of competent and trust-worthy engineers was also referred to as a serious problem.¹⁵ Exclusive traffic in passengers, the Court believed, would not be available in India.¹⁶

Pessimistic ideas as regards the mechanical practicability and the commercial profitability of the railways in India were being circulated throughout England by contemporary English newspapers and railway magazines. The Railway Register for the month of August 1845 referred to two other physical difficulties in India in addition to those mentioned by the Court. One was the occurrence of frequent earthquakes which, though not so severe as to crumble cities, were sufficiently powerful to alter levels, to undermine bridges and to loosen embankments. Again, the soil in India was peculiarly liable to shifting. For instance, on the subsidence of rains, it was frequently found that the bed of rivers had changed. This sort of shifting, even to the extent of a few inches, was dangerous in the case of railways—which might lead to the dislocation of its parts.¹⁷ The same magazine in its July issue of the same year wrote, alluding to the “vast and important” advantages of the opening of the railway communication in India—“It would be vain to deny that these are considerations which, encouraging and stimulative of honourable energy as in themselves they are, depend upon

15. Court to Gov. Gen.-in-Counc, 7 May 1845, (Legislative Dept. No. 11), *Parl. Pap.* (H C.), 1845, XXXIV. (327), pp. 1-2.

16. *Ibid*, p. 1.

17. *Railways in India* ; being four articles reprinted from the Railway Register for July, August, September and November, 1845 (London 1845), pp. 18-20.

circumstances of such a nature that it would not be reasonable to expect their fulfilment within very limited period. In this, therefore, as a mercantile speculation, consist the difference between any projects for establishing railways in England and in India. In the case of the former, a profitable return is confidently looked forward to, the amount of which is even calculated with nicety from the moment the line is opened ; the traffic is as it were ready cut out to hand, and the public wait impatiently to pay their money to the projectors, not the projectors for the public to patronise their new mode of conveyance. In India, on the other hand, the case is very different. With the exception of a very limited number of persons, almost exclusively men in official positions, who perform tedious and expensive journeys on stated occasions, there are no travellers in India. The vast native population are so poor and so saving of everything but time, that it would be long before they could be induced to pay even a very few anas to be conveyed, instead of walking, a journey of twenty miles.”¹⁸ Even in India itself, opinion was not unanimous as regards the success of railway projects there. In December 1845, Bradshaw’s *Railway Gazette*, published from London, quoted the following paragraph from the *Friend of India*, “If the commercial traffic is insufficient to furnish a dividend, the assistance of the state will assuredly be given, rather than that India shall be allowed to remain without the inestimable benefits of rails. The railway is, if possible, more important on political than on mere mercantile considerations The money which may be expended in this enterprise will be abundantly repaid in the compactness and security of the empire ;”¹⁹ While most of the commercial firms in Calcutta were very enthusiastic about the prospects of railways in India,²⁰ there were a few amongst them who expressed pessimistic views on this subject in their letters to Stephenson and these, appended to Stephenson’s Report published in London in 1844, received wide circulation in England. Thus, Messrs. Gillanders, Arbuthnot and Co. referred to the possible competition from the steam service then plying the river Ganges for the line

18. *Railways in India etc., op. cit.*, p. 2.

19. *Bradshaw’s Railway Gazette*, (London) 3 Dec. 1845, p. 746.

20. *Supra*, Chap. 1, p. 3.

of railway along that river.²¹ Messrs. Gisborne and Co. apprehended a high cost of construction.²² Messrs. Leach, Kettlewell and Co. dwelt on the low passenger traffic in India.²³

The E.I. Rly. Co. was formed in 1845 amidst this atmosphere of mistrust and doubts. Stephenson, with his usual enthusiasm for any railway project in India, declared in Calcutta in July 1844 that no financial aid was required of the Government.²⁴ But on his arrival in England towards the end of 1844, he became aware of the real facts of the situation concerning the availability of capital in England for his project and had to ask for a government guarantee. The alternative proposal was that the Government would pay a specific sum of money for a fixed and definite period, which was to be repaid by the Railway Company later out of their profits.²⁵ The amount thus asked for was £30,000 annually, which was to be withdrawn when the Railway Company's net profits exceeded 3%.²⁶ It was admitted in a communication from the Railway Company that individuals could not be expected to advance money in such a novel undertaking as Indian railways without some further assurance of definite profits.²⁷

It was long before any settlement was arrived at as regards the question of guarantee. The proposal of the lump sum grant was rejected from the very beginning. In the first phase of the negotiations, much difference of opinion ensued as to the rate of the guarantee and the period of its duration. After prolonged considerations and deliberations, the Court of Directors proposed a 4% guarantee for a period of 99 years. But these terms were regarded by the Board of Control as too liberal and they allowed

21. Messrs. Gillanders, Arbuthnot and Co. to Stephenson, 27 August 1844, Stephenson's *Report* etc., *op. cit.*, p. 21.

22. C. J. Richards (Messrs. Gisborne and Co.) to Stephenson, 28 August 1844; *Ibid.*, p. 25.

23. W. W. Kettlewell (Messrs. Leach, Kettlewell and Co.) to Stephenson, 28 August 1844, *Ibid.*, p. 23.

24. Stephenson to Halliday, 15 July 1844, *Ibid.*, p. 17.

25. Larpent and Stephenson to Melvill, 28 Jan. 1845, Rly. Home Corrs., 'A', Vol. 1.

26. *Ibid.*

27. Larpent to John Shepherd, Chairman of the East India Company, 19 March 1845, *ibid.*

this 4% guarantee only for a period of fifteen years.²⁸ But these terms were stated by the Railway Company to be inadequate to enable them to raise money from the English capitalists who were in a position to obtain guaranteed return to the extent of 5% and upwards in lines under immediate construction in Great Britain.²⁹ Guaranteed dividend was not something unprecedented in the history of the railway undertakings of the period. In the height of the railway mania of 1844-47, the established railway companies of England were declaring guaranteed dividends.³⁰ But, the circumstances were entirely different in these cases. Here, the importance of railways both as commercial investments and as factors in the social, economic and political life of the country was established. The offer of the guarantee came from the projectors themselves who were confident of the commercial success of their undertakings. Their object was to attract capital from other competing projects. Under these circumstances a 4% guarantee for a period of fifteen years was too insignificant an inducement for the investors to overcome their hesitation as regards investment in the Indian railways and at the same time, to overcome their temptation for investing money in railways at home or on the continent.

In July 1847, the Railway Company made a fresh proposal for the extension of the period of the guarantee from fifteen to twenty-five years.³¹ The Court of Directors were agreeable to the proposal. Their opinion was that even if the guarantee was limited to fifteen years, the rate guaranteed should be raised to 5%.³² The Board of Control this time agreed to this increase on condition of the free carriage by the railways when opened, of government mails, and of troops and stores at the lowest rates

28. Minutes of Evidence taken before the Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), pp. 2-3, Q. 15.

29. Larpent and Colvin to Court, 3 Feb. 1847, Rly. Home Corrs., 'A', Vol. I.

30. Extract from the *Colonial Magazine*, quoted in Bradshaw's *Railway Gazette*, 19 Dec. 1846, p. 743.

31. Larpent and Colvin to Melvill, 6 July 1847, Rly. Home Corrs., 'A', Vol. I.

32. Melvill to Board of Control, 17 June 1847, as referred to in C. S. Byng, Sec. to the Board of Control, to Melvill, 23 June 1847, Rly. Home Corrs., 'A', Vol. I.

chargeable for passengers and goods.³³ The period of guarantee also was extended to twenty-five years.³⁴ The line to be constructed comprised, instead of one section from Calcutta to Burdwan collieries, as earlier proposed, several sections of a line from Calcutta to Delhi at a total capital cost not exceeding in the aggregate £3,000,000, paid into the East India Company's Treasury in the course of three years. Before the contract could be signed, however, the Railway Company was required to pay into that Treasury a preliminary sum of £100,000.³⁵

The considerations which shaped the Government policy here were the following. The first of these was the growing critical conditions of the English money market. The failure of crops in 1846 in England necessitated large imports of corn from foreign markets and this resulted in a heavy drainage of gold from the country and British capital investment in foreign spheres slackened to a considerable extent.³⁶ Under these circumstances, capital became less available for Indian railways and the awareness of this situation in the money market led to the reversal of the attitude of the Government.³⁷ The grant of almost similar terms to the other railway companies mentioned above, constructing railways in colonies, was another decisive factor. The arrangement made with the Ceylon Railway Company specially influenced the terms granted to the E.I. Rly. Co.³⁸ Pressure also came from the cotton manufacturers of Great Britain. In 1847, the United States was at war with Mexico and the normal supplies of cotton from that country to England suffered. The growing need for this article in England led to the increasing interest of the British industrialists in developing possible alternative sources in India. Since the greatest obstacle to the exploitation of these sources was the absence of adequate means of inland communication, the cotton interests in England clamoured for all possible encouragement being given to the railway schemes pro-

33. Byng to Melvill, 23 June 1847, *ibid.*

34. Melvill to E.I. Rly. Co., 26 July 1847, as referred to in Larpent and Colvin to Melvill, 26 July 1847, *ibid.*

35. Larpent to Melvill, 18 August 1847, Rly. Home Corrs., 'A', Vol. I.

36. Jenks, *op. cit.*, p. 153.

37. Melvill to Board of Control, 17 June 1847, as referred to in Byng to Melvill, 23 June 1847, Rly. Home Corrs., 'A', Vol. I.

38. Byng to Melvill, 1 May 1847, *ibid.*

posed for that country.³⁹ The Chamber of Commerce and Manufacture at Manchester wrote in their memorandum to the Court of Directors that the railway projects for India should receive the promptest and most favourable considerations of the Court by the free grant of land and materials or by the guarantee of minimum dividend. They stated,—“.....the introduction of the railway system into India has not met with that encouragement from Government to which, under the peculiar circumstances of that country, it is entitled,.....”⁴⁰ The grant of guarantee to other colonial railways formed one of the strongest pleas forwarded by these organisations.⁴¹

But, unfortunately, because of the acute financial crisis in England in 1847-48, the arrangement between the Court of Directors and the Railway Company as referred to above, could not be put into operation. This crisis, following the failure of crops in 1846, was already taking shape from the close of that year. The adverse effects of this impoverished state of the money market on the railway projects were felt perceptibly in 1847. The shortage of finances led to the collapse of numerous bubble companies advocating bogus schemes. This was followed by the out-break of the revolution in France in March 1848 which paralysed all commercial and financial transactions throughout Europe.⁴²

Under ordinary circumstances, the provision of the 5% guaranteed dividend over a period of twenty-five years, as the concession was commonly understood then, might have tempted at least a section of English investors to invest their money in Indian railway undertakings. By November 1846, a rumour got circulation in England through the press that a 4% guarantee would be conceded by the Court of Directors to a Railway Company—which was not named—undertaking railway construction in India.⁴³ With reference to that, the Colonial Magazine wrote—“We had almost feared that the delay which proverbially

39. Memorial of the Directors of the Chamber of Commerce and Manufactures in Glasgow (to the Court of Directors), 1 July 1847, Rly. Home Corrs., ‘A’, Vol. I.

40. Memorial of the Directors of the Chamber of Commerce and Manufactures at Manchester, to Court, 17 June 1847, para 1, *ibid*.

41. For instance, *ibid*.

42. Jenks, *op. cit.*, pp. 153-155.

43. Bradshaw’s *Railway Gazette*, 7 Nov. 1846, p. 559.

attend negotiations [sic] with a government would have retarded to an injurious extent the proceedings of the companies who have selected India as the field of their operations, and that the capital which might have been eagerly advanced for such works under the security of a minimum guarantee would have been entirely absorbed by the demands of English and continental lines. We rejoice that our apprehensions have proved groundless, and that to our own possessions—and, we may add, to by far the most valuable of them—a portion of that wealth which would otherwise have unquestionably been devoted to similar object for the benefit of foreign countries, will now be applied to enriching our own colonies and that the Government have so promptly and judiciously decided upon the early course which would have affected this object.”⁴⁴ But, under the unusual conditions of a stringent money market in 1847-48, when drastic reductions were made in the home and continental investments, even the guaranteed dividend failed to have any considerable effect in inducing people to advance money for Indian railway projects. The Railway Company failed to raise money even for the payment of the initial deposit of £100,000, and was thus forced to ask for several extensions of the time specified for its payment. The matter dragged on for about a year and in May 1848 the whole negotiations were on the point of collapse as the result of the failure of the Railway Company to pay the initial deposit by 1 May 1848, the day finally fixed by the Court of Directors.⁴⁵

The attitude of the Government authorities in London, i.e., the Court of Directors and the Board of Control, during this phase of the negotiations is also subject to criticism. The rigours of the financial crisis of 1847-48 were felt on all aspects of national life in England. Under such circumstances, a more liberal attitude should have been adopted by them.

However, even after this, in July 1848, the Railway Company proposed an agreement on condition of a guaranteed dividend of five per cent for the construction of a very limited portion of the line between Calcutta and Delhi to be mutually

44 Quoted in Bradshaw's *Railway Gazette*, 19 Dec. 1846, p. 743.

45. Melvill to Noad, 29 April 1848, as referred to in the latter's letter to the former, 29 May 1848, Rly. Home Corrs., 'A', Vol. I.

agreed upon between the Government and the Railway Company at an estimated cost of not more than £1,000,000.⁴⁶ This proposal was agreed to by the Court on condition that a deposit of £60,000 should be made by the Railway Company in the East India Company's treasury before contract could be signed.⁴⁷ This amount was deposited forthwith by the Railway Company by August 1848.⁴⁸

But, even after this, new complications arose for the Railway Company. The decision to undertake the construction of only two limited sections of the original project created a confusion amongst the shareholders as to the real worth of the entire scheme.⁴⁹ This confusion became far more widespread when towards the end of 1848, the Court of Directors made a sudden declaration that what they would guarantee was not a 5% dividend but 5% interest on the capital advanced by the Railway Company.⁵⁰ Guaranteed dividend involves the prior assumption of the profitability of the capital to the extent that dividend is guaranteed, even if losses are sustained actually. So far as the shareholders are concerned, they are assured of a sure return at the rate guaranteed even if actual profits fall below that rate and the prospects of the dividend rising further in case the actual profits rise above the rate guaranteed are always before them. But, where a certain rate of interest only is guaranteed, the return on the capital invested, so far as the shareholders are concerned, is fixed (unless, of course, the rate guaranteed is altered by a fresh agreement), irrespective of the extent of the profitability of the undertaking. Referring to the negotiations between the Court of Directors and the E.I. Rly. Co., it is not very difficult to imagine what could be the reac-

46. Noad to Melvill, 28 June 1848, as referred to in the latter's letter to the former, 29 May 1848, Rly. Home Corrs. 'A', Vol. I.

47. Melvill to Noad, 4 July 1848, as referred to in the latter's letter to the former, 24 August 1848, *ibid.*

48. Noad to Melvill, 24 August 1848, *ibid.*

49. John B. Walbanke, one of the shareholders, to Court, 7 Nov. 1848; also Lamb, George Bayley, Thomas Sumner, all shareholders, to Court, 9 Nov. 1848, *ibid.*

50. Minutes of Evidence taken before the Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 26, Q. 333.

tion of the shareholders to the Court's declaration as mentioned above. The prospects of higher profits vanished. But, even that was not possibly so disappointing to them since the hopes of obtaining higher profits in the case of the Indian railways in those early days were obviously not so strong. The swing-over from "guaranteed dividend" to "guaranteed interest" by the Court themselves, in fact, strengthened the doubts in the minds of the shareholders as to the feasibility of the entire scheme as advertised by the Railway Company so far. In view of this a number of shareholders naturally intended to withdraw their names from the shareholders' list.⁵¹

It is apparent that the Court of Directors, throughout the course of the negotiations, used the terms dividend and interest very loosely, without being careful about their different technical interpretations. To the proposal of guaranteed dividend, when it was first made, there were serious objections from different Government authorities for the obvious reason that it subjected the Government to the risk of loss and gave it no share in the possible gain. The Court of Directors wrote in 1845,— "With regard to a guaranteed return on the capital laid out, which the parties who have applied to us request, we consider that mode of co-operation liable to many objections and likely to prove very unsatisfactory."⁵² The Government of India stated in May 1846—".....It is not expedient that the Government should guarantee any amount of dividend, either while the railway is being constructed. or after its completion."⁵³ Maddock also held the same opinion.⁵⁴ By the provision of guaranteed interest, the position of the Government in relation to that of the shareholders could be said to have improved to some extent. The Government could not of course evade the risk in case of loss. But, in case of profits rising above the rate guaranteed, the Government was to have all those extra profits. The proposal of guaranteed interest was, thus, naturally more

51. Walbanke to Court, 7 Nov. 1848; also Lamb, George Bayley, Thomas Sumner, to Court, 9 Nov. 1848, Rly. Home Corrs, 'A', Vol. I.

52. Court to Gov. Gen.-in-Counc., 7 May 1845, (Legislative Dept. No. 11), *Parl. Pap.*, (H.C.), 1845, XXXIV, (327), p. 2.

53. Govt. of India to Court. 9 May 1846, (Legis. Dept. No. 1), *Parl. Pap.*, (H.C.), 1847, XLI, (68), p. 2.

54. Maddock's Minute. 1 May 1846, *ibid.*, p. 18.

acceptable to the Government, in case the Government monetary assistance to the Railway Company proved indispensable. But, what is really unaccountable is the almost synonymous use of these terms—interest and dividend—by the Court of Directors. In his evidence, in 1858, before the Select Committee of the House of Commons on the progress of railway construction in India, J. Danvers, Assistant to the Secretary in India House, who had charge of all matters relating to railways in India, referred to two letters written by Melvill. In the first of these dated 5 October 1847, Melvill wrote that the Court would guarantee an interest or dividend for twenty-five years at the rate of 5%.⁵⁵ The other letter written in July 1847 to the chairman and the deputy chairman of the E.I. Rly. Co. stated, "That the Court of Directors had resolved to augment the rate of dividend to be guaranteed by the East India Company to five per cent."⁵⁶ It also appears strange that this confusion on the part of the Court of Directors was never pointed out to them by the Railway Company in a straightforward manner.⁵⁷

However, the arrangement that was ultimately made sought to make a compromise between the mutual interests of the Court and the Railway Company. Under the terms of the contract, the Court guaranteed, for a period of 99 years,⁵⁸ a 5% interest on the capital deposited into its treasury by the Rail-

55. Minutes of Evidence taken before the Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 13, Q. 149.

56. *Ibid.*, p. 13. Q. 149

57. Noad's evidence before the Sel. Com. on East India (Rlys), 1858, is conclusive of this fact. He said that from the correspondence that the Railway Company had with the Court on this question, the former assumed that they had not made themselves misunderstood as to the meaning of the term guaranteed dividend. Cf. *Ibid.* p. 29, Q. 377.

58. If, however, the Government would decide to purchase the undertaking after the expiration of the first 25 or 50 years of this term of 99 years as provided under the contract, the payment of this interest will cease; cf. the text of the contract between the East India Company and the E.I. Rly. Co., 17 August 1849, *Parl. Pap.*, (H.C.), 1859, XIX, (259), p. 11.

way Company.⁵⁹ The receipts from the railway, as soon as it was opened, were to be paid into the Government treasury and to be applied, after meeting the working and the maintenance cost of the railway out of these funds, to make up the amount due on account of the guaranteed interests. In case the profits rose above the rate guaranteed, half of the excess was to be added to the dividend of the shareholders and the other half was to be applied to the re-payment of the sums previously paid by the Government on account of the guaranteed interests. When all these former advances were repaid, the entire profits were to go to the shareholders.⁶⁰ If, however, these receipts did not reach the amount to be paid for working and maintaining the railway, the deficiency was chargeable against the guaranteed interests.⁶¹ The contract, of course, provided to the Railway Company the safeguard against such an eventuality. It stated that after the railway had been completed and in work for at least three months, the Railway Company could, at any time, give a six months' notice to the Government of their intention to relinquish it and in such case, the Government, after the expiration of those six months, was to pay back to the Railway Company the capital that they had expended in the construction of the railway.⁶² This virtually amounted to the Government guarantee over the capital invested and the shareholders' risk lay only in the interests payable during the period prior to the relinquishment of the railway by the Railway Company to the Government. In fact, all the agreements made from time to time with different guaranteed railway companies of the period were based on similar financial arrangements.

We may refer here to the prices of the Indian railway securities in the London Stock Exchange during these initial years of negotiations for railways in India. The price in London of the shares of both the E.I.R. and the Great Indian Peninsular Railway Company, the only two railway companies interested in the railway construction in India during this period, remained

59. The text of the contract between the East India Company and the E.I. Rly. Co., 17 August 1849, *Parl. Pap.*, (H.C.), 1859, XIX, (259), p. 8.

60. *Ibid.* pp. 8-9.

61. *Ibid.* pp. 11-12.

62. *Ibid.*, p. 10.

very low throughout these years. Thus, during the height of the railway mania in 1846-47 when a £50 share of the London and South Western Railway Company and a £29 share of the Paris and Orleans Railway Company were fetching prices there as high as £82⁶³ and £53⁶⁴ respectively, the price of the £50 share of the E.I. Rly. Co. in the same market never rose above £3⁶⁵. In the period following, there was further fall in the price of the Indian railway securities in London. It was not before the middle of 1849 that the price of the £5 shares of the Great Indian Peninsular Railway Company began to rise above par there, though, even during this year, there was no noticeable increase in the price of the shares of the E.I. Rly. Co. in that market.⁶⁶

Changes in this pattern of affairs came to be noticed since the early fifties of the nineteenth century. The earlier doubts and mistrusts prevalent in England as regards the practicability of building railways in India were gradually being removed and there was noticeable increase of interest amongst investors there in investing their money in Indian railway projects. It was not the guaranteed interest alone which produced this result. As we have seen, guaranteed interest was not free from all risks. In case a particular railway failed to earn that amount which was to be paid for working and maintaining it, the deficiency was chargeable against the guaranteed interests. The kind of feeling that prevailed in England as to the practicability of railways in India in the forties, we have referred to already. It is not unreasonable to assume that under such circumstances, the pecuniary success of a railway in India even to that extent was doubtful to many at the beginning and consequently, the guaranteed interest was not all that attractive to them.

The most important factor in creating this popular interest in England in Indian railways was perhaps the actual commencement of operations in India and the completion and the opening of the lines in portions. The Great Indian Peninsular Railway Company, undertaking the construction of a line of railway from Bombay to Callian, 34½ miles, commenced works in October

63. *Economist*, (London), 2 May 1846, p. 588.

64. *Ibid.*, 14 March 1846, p. 351.

65. The Railway Share lists of the relevant issues of the *Economist*.

66. *Ibid.*

1850 and finished the line in May 1854. In the meantime, another contract was made in August 1853 with the same company for the construction of the line to Shawpur.⁶⁷ The first sod on the experimental line of the E.I.R. was turned in January 1851 and the work of construction once started, went apace with occasional interruptions of no serious nature as we shall see later on.⁶⁸ Railway construction started in Madras as well in 1853.⁶⁹ The idea gained through experiences was that there were certain difficulties to railway construction in India, no doubt, but these were not insurmountable. As regards the commercial profitability of railways in India, there was of course no means of ascertaining it until the lines were in actual operation. But, popular enthusiasm for railways marked in areas where the work of construction was going on in India, provided sufficient ground to be optimistic in this respect as well. Baker, the Consulting Engineer to the Government of India, wrote in 1853 that his constant contacts with the local people in areas where the line of the E.I.R. was being constructed, convinced him that not only would they use railways for the conveyance of goods but also that they themselves would feel no scruple in using them if only the freights and fares were moderate.⁷⁰ Assertions of this kind, no doubt, received circulation in England and played an important part in moulding the investors' attitude there towards Indian railways.

The importance that Jenks⁷¹ has given to the views of Dalhousie, the Governor General of India from 1848 to 1856, in creating this new trend in English attitude towards Indian railways, is not unjustified. Dalhousie supported a wide extension of the railway system in India and his opinions counted not only

67. Report to the Sec. of State for India in Council on Rlys. in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII (2669), p. 12.

68. *Infra*, Chap. V, pp 113-123.

69. Report to the Sec. of State for India in Council on Rlys. in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (2669), p. 15.

70. Report by the Constg. Engr. (Baker) to Govt. (Rly. Dept.) on the result of his examination of certain lines for the extension of railways in the Bengal Presidency, during the cold season of 1852-53, dated 15th March 1853, *Parl. Pap.*, (H.C.) 1852-53, LXXVI, (787), p. 11.

71. Jenks, *op. cit.*, pp. 211-212.

because of his position as the Governor General of India but also because of the experiences he had in railway matters generally while in England.⁷² Dalhousie wrote in April 1853—"The mechanical practicability of constructing railways in India needs no further experiment for its establishment. If there are difficulties in India from which railway works in Euope and America are free, India is exempt, on her part, from many great impediments to which these countries are subject. If there are still doubts and difficulties here, which the soil or season of India create, it may now be assumed with confidence that there are none which the skill and experience of those who are charged with the undertaking will not be able to master."⁷³ As regards the commercial success of railways in India he wrote,—“Again the commercial success of railways in India, which the experimental lines were partly intended to test, is, in my humble judgment, not less certain than the practicability of them as material constructions.”⁷⁴ And he reached the conclusion that—“..... it may be considered as a matter determined, that the limited sections of experimental line which have heretofore been sanctioned by the Honourable Court are no longer to form the standard for railway works in India, but that these are to be undertaken upon a scale proportional to the extent of the British dominions in the East, and to the immediate benefits that they are calculated to produce. I conceive that experimental lines of small extent are at this day no longer requisite.”⁷⁵

It also so happened that the money market conditions in England became exceptionally favourable in the early fifties and along with the increasing confidence in the prospects of railways in India, this fact also may be mentioned as facilitating to some extent the easier flow of capital for Indian railways during this period. The monetary opulence in England in these

72. In 1845, Dalhousie became the President of the Board of Trade and in that capacity, he gained considerable experiences in railway matters in England. Cf. J. H. Clapham, *An Economic History of Modern Britain, 1850-1886*, vol. I (Cambridge 1939), pp. 421-423.

73. Dalhousie's Minute, 20 April 1853, *Parl. Pap.* (H.C.), 1852-53, LXXVI, (787), p. 115.

74. *Ibid.*

75. *Ibid.*

years was the result of the discovery of gold in California in 1850 and in the Australian province of Victoria in 1851. The total amount of gold existing in Europe and America prior to these discoveries was estimated at £557,000,000.⁷⁶ During the five years ending in 1852 the amount of gold produced in California and Australia alone was £56,000,000.⁷⁷ Gold flowed into England due to the activities of the numerous British mining companies which cropped up in the localities. Even before the capital in this particular sphere became productive, the labour of the people engaged in different commercial pursuits to meet the growing needs of the rapidly increasing settlers in the mining areas bore fruits.⁷⁸ A new vigour was put in the business life of England following these great discoveries of the period.

However, the confidence thus created was not lost, as it has been pointed out by Jenks,⁷⁹ even during the days following the Mutiny in 1857. This is apparent from the price movement of Indian railway securities in the London Stock Exchange. The sudden fall in price on the first receipt of the news of this outbreak was shortlived and the former position was quickly recovered. As it is exemplified in the case of the shares of the E.I. Rly. Co., the average price of £100 stock of this Company during the year 1857 was £106 though it once fell to £97.⁸⁰ The number of the proprietors of this Company increased to 6,200 by April 1860 as against about 3,000 in 1857.⁸¹

But, at the same time, it is to be noted that the guaranteed interest remained an essential pre-condition of raising money in the English money market for Indian railway projects. The success of the original projects of railways in India induced the Court of Directors to write in 1857 with regard to this question

76. William Newmarch, *The New Supplies of Gold* (London 1853), p. 5.

77. *Ibid.*, p. 18.

78. Jenks, *op. cit.*, pp. 161-162.

79. *Ibid.*, p. 214.

80. Report to the Sec. of State for India in Council on Rlys in India to the end of 1859, *Parl. Pap.* (H.C.), 1860, LII, (2669), p. 15.

81. Noad to Und. Sec. of State for India, 5 April 1860, Rly. Home Corrs., 'C', Register I, Vol. II.

of guarantee—"We hope indeed, that the necessity for granting assistance in this shape has passed away, and that within a limited period, the financial prospects of well-chosen, and well-managed railways in India, free from heavy parliamentary and legal charges, and endowed by Government with the advantages of a free grant of all the land required for their construction, and of general support, will so approve themselves to the public, that it will be found practicable to raise the requisite capital for such undertakings, without the additional inducement of a guarantee of interest."⁸² But, actual experiences in this respect proved to be to the contrary. The Court made the above comment in connection with the agreement to be made with the Oude Railway Company.⁸³ But, it was not long before that Company admitted its inability to raise capital in England without the guaranteed interest as granted to the earlier projects.⁸⁴ Long after this period, in the year 1867, the only Railway Company functioning in India without any guaranteed interest of the usual nature was the Indian Tramway Company and even that, finding itself unable to extend its limited undertakings with the Government assistance then given to it, was endeavouring to secure the concession of the usual guarantee of interest.⁸⁵ In 1868, in view of the serious objections to the guarantee system, other ways of government assistance to the railway companies were suggested. But, none of these was successful. Under these circumstances, Danvers wrote—".....it is now acknowledged that the security furnished by the Government guarantee and control is necessary to induce capitalists in England to provide money for Indian railways."⁸⁶ But, it is apparent that the guaranteed interest was not performing the same function as in forties. In the forties, it was the last desperate means to attract capital for limited schemes of uncertain

82. Fin. (Rly) Des. to, 28 Jan. 1857, No. 5, Rly. Des. Beng. Ind., Vol II, p. 13.

83. *Ibid*, p. 12.

84. Fin. (Rly.) Des. to, 4 Feb. 1857, No. 7, Rly. Des. Beng. Ind., Vol. II, pp. 18-19.

85. Report to the Sec. of State for India in Counc. on Rlys. in India for 1866-67, *Parl. Pap.* (H.C.), 1867, L, (3856), p. 11.

86. Report to the Sec. of State for India in Counc. on Rlys. in India for 1867-68, *Parl. Pap.*, (H.C.), 1867-68, LL, (4033), p. 5.

results in a foreign land—capital which could find more fruitful employment in projects with brighter prospects at home and other known countries on the continent. But, in the fifties, the prospects of the Indian railways did not seem so uncertain as they were in the forties and the guaranteed interest was acting as an additional inducement to encourage British capital being invested in them.

It now remains for us to see how, under the changing circumstances of the period, capital was being raised by the E.I. Rly. Co. Excepting the years of financial stringency in England, the Railway Company found little difficulty in raising the capital which it required. And this was the position in spite of the fact that, judging by the Indian standard, the E.I.R. ultimately proved to be an expensive undertaking. The original estimate of the required amount of capital for the entire undertaking in our period, was £14,000,000.⁸⁷ But on 31 December 1879, when the capital account of the Railway Company was finally closed due to the purchase of the undertaking by the Government, the total expenditure had reached the fabulous amount of £31,060,866.⁸⁸ There were several reasons for this. The Sepoy Mutiny of 1857 is said to have added about £4,000,000 to the cost of the undertaking⁸⁹ either directly through the destruction of the valuable railway materials in workshops or in transit,⁹⁰ and indirectly, in the shape of the prolonged establishment costs due to the stoppage of work during the troubles and also in the form of rising prices of labour and materials.⁹¹ Baker wrote in July 1857—"The value of railway materials afloat on the Ganges at the period of the out-break was not less than half a million sterling. It may be found that a very large

87. The original estimate of the capital required for the different portions of the E.I.R. constructed in our period was the following :—The experimental Line—£ 1,000,000 ; the main line—£ 9,000,000 ; the Jubbulpore branch—£ 2,000,000 ; and the chord line—£ 2,000,000. This gives us a total of £ 14,000,000 as the estimated capital for the entire undertaking.

88. Report to the Sec of State for India in Council on Rlys. in India for 1879-80, *Parl. Pap.*, (H.C.), 1880, LIII, (C. 2737), p. 22.

89. Report to the Sec. of State for India in Council on Rlys. in India for 1872-73, *Parl. Pap.*, (H.C.), 1873, L, (C. 838), p. 24.

90. *Infra*, Chap. V, pp. 138-140.

91. Baker's Report, 13 July 1857, Rly. Letts. Encl., Vol. XVI.

proportion of it has been or will be lost.”⁹² The cost of transport of the permanent way materials from Calcutta along the Ganges to the respective points on the line was heavy.⁹³ The difficult type of country through which the line passed is also to be taken into account. Viaducts and bridges on this line were estimated to cost £1,725,000—or at an average £1,500 per mile of line.⁹⁴ Some parts of this line were again made double and that also added to the original estimate.⁹⁵ Over and above all these, the lack of experiences in the construction of a novel undertaking in a foreign country like India can be said to have led to higher costs not only on this particular line, but also on other railways constructed in the same period in India. The average cost of these original trunk lines of railways in India was stated to be £20,000 per mile.⁹⁶ In the seventies, with a history of about twenty years’ railway development in India, there are instances of railways being constructed at a much lesser cost. As for instance, the Wudwan branch of the Bombay, Baroda and Central India Railway completed in 1872 cost under £6,000 per mile.⁹⁷ Examples of this kind can be multiplied if we make a detailed study of the history of the railway construction in India in the seventies onward. However, because of these reasons, the yearly capital expenditure for this undertaking went on mounting and almost the entire amount was provided from England. We append a list of the yearly amount of capital raised in England for this undertaking until the year 1864-65⁹⁸—the year in which the main line was opened and the major works of construction, so far as this undertaking was concerned, might be said to be over.⁹⁹

In the years of the financial stringency in England, of course, the Railway Company found some difficulty in raising capital there. Thus in 1854, the Railway Company was in some finan-

92. *Ibid.*

93. *Infra*, Chap. V, pp. 136-137.

94. Report to the Sec. of State for India in Council on Rlys. in India for 1872-73, *Parl. Pap.*, (H.C.), 1873, L, (C. 838), p. 25.

95. *Ibid.*

96. *Ibid.*, p. 23.

97. *Ibid.*

98. Appendix I.

99. *Infra*, Chap. V, p. 138.

cial trouble, though it was of a limited nature. The year 1854 saw considerable drainage of gold from England. The principal reason of it was the beginning of war with Russia in March which meant the stoppage of supplies of grain from that country and the consequent need to buy it from other expensive markets. The failure of harvest in England in the preceding year made the situation worse.¹⁰⁰ The Railway Company, with the rate of guaranteed interest reduced to 4% under the contract of February 1854, found it difficult to raise the capital which it required. In April 1854 the Railway Company stated that in view of the present state of financial and political affairs and also considering the reduced rate of interest on the capital under the February contract, they were not in a position to raise money to make the initial deposit of £641,894 in the following June as required under that contract.¹⁰¹ By May 1854 incidents came from India for large supplies of permanent way materials which involved a considerable outlay of capital and the financial position of the Railway Company became more shaky.¹⁰² However, to meet the situation for the time being, the issue of debentures at 4½%—capital and interest both to be guaranteed by the Government—was decided on and about £1,000,000 was raised in this manner.¹⁰³ Ultimately, in consideration of the state of the money market in England, the East India Company decided to increase the rate of the guaranteed interest on the extension capital on certain conditions.¹⁰⁴

Financial strain was felt to a certain extent more or less by almost all the railway companies operating in India during the post-Mutiny period. The Mutiny had little effect in undermining popular faith in Indian railways as channels of investment, as we have seen. But, in an indirect way, it created obstacles in the easy flow of British capital in this sphere. A rapid development of the railway system in India was decided after the

100. J. H. Clapham, *An Economic History of Modern Britain, 1850-1886*, Vol. II, (London 1932), p. 365.

101. Noad to Melvill, 7 April 1854, Rly. Home Corrs., 'A', Vol. VI.

102. Noad to Melvill, 17 May 1854, *ibid*.

103. Noad to Sir George Clerk, Sec. to Board of Control, 2 Feb. 1859, Rly. Home Corrs., 'C', Register I, Vol. I.

104. Board of Directors of the E.I. Rly. Co. to their Agent in India, 19 Dec. 1854, Rly. Home Corrs., 'A', Vol. VII.

Mutiny and the demands made on the English money market were excessive. Expenditure was at a far greater speed than that at which capital could be raised in England.¹⁰⁵ The heavy loans contracted by the Government of India in England to meet the extraordinary expenses caused by the Mutiny interfered with the financial operations of the railway companies constructing railways in India.¹⁰⁶ These were again years of financial stringency in England. No sooner had England recovered from the financial crisis of 1857 than there was war in Europe in 1859 and conditions in the English money market stiffened.¹⁰⁷ From the end of 1860 the fear of Civil War in the United States was looming large and there was drainage of gold in large volumes from England to pay for cotton from India, Egypt and Brazil.¹⁰⁸ More than one railway company constructing railways in India during this period failed to raise the capital they needed and to help them to carry on their works, the Government of India was advancing loan at a certain rate of interests.¹⁰⁹ In the financial year 1860-61 it became clear that there was no other way but to curtail the railway expenditure in India since the Government of India declared itself unable to make any advances on account of railways after the month of May 1861.¹¹⁰ The budget of the Government of India for the financial year 1860-61 showed a clear deficit of £6,678,097.¹¹¹ This was due to the increased expenditure under several heads, the most important of them being military and public works.¹¹² The increased military charges were obviously due to the extra precautions taken after the Mutiny. The increased expenditure in public works was principally due to the

105. Report to the Sec. of State for India in Council on Rlys. in India for 1860-61, *Parl. Pap.*, (H.C.), 1861, XLIII, (2826), p. 28.

106. *Ibid.*

107. Clapham, *An Economic History of Modern Britain*, Vol. II, *op. cit.* pp. 372-373.

108. *Ibid.*, p. 373.

109. Report to the Sec. of State for India in Council on Rlys. in India for 1860-61, *Parl. Pap.*, (H.C.), 1861, XLII, (2826), pp. 11-12.

110. Govr. Gen.-in-Council to Charles Wood, Sec. of State for India, 5 Feb. 1861 (Fin. Dept. No. 16), *Parl. Pap.*, (H.C.), 1861, XLIII, (233), p. 9.

111. *Ibid.*, p. 2.

112. *Ibid.*, p. 5.

provision made to the extent of 10,00,000 rupees for the construction of different works in the N. W. Provinces and the Punjab for the relief of the famine-stricken people of those provinces and also to the provision of another 1,000,000 rupees for the public works department of Madras.¹¹³ Against this increased expenditure, there was decreased income specially under land revenue due to the out-break of a local famine in the N. W. Provinces¹¹⁴ which we have referred to above. However, this situation was overcome by the postponement of works which had not yet commenced.¹¹⁵ Greater financial trouble was apprehended for the year 1861-62. The total capital expenditure for railways in India for that year was estimated at £8,000,000.¹¹⁶ With little hope of the conditions in the English money market improving or of the finances of India being restored to their usual state, suspension of works even on the main line was suggested in 1861 as the only way out.¹¹⁷ To overcome this crisis the Secretary of State himself contemplated the raising of a loan in England and send the necessary bullion to India.¹¹⁸ Fortunately the conditions in the English money market improved and the railway companies themselves were able to raise the necessary money in England.¹¹⁹

The E.I. Rly. Co. reported as having financial trouble as early as in 1859. There was the need of some additional capital for works on the main line. The Board of Directors of the Railway Company insisted, in consideration of the state of the money market, on meeting these needs out of the money already deposited in the Government treasury for the Jubbulpore line

113. Gov. Gen.-in-Counc. to Wood, 5 Feb. 1861 (Fin. Dept. No. 16), *Parl. Pap.*, (H.C.), 1861, XLIII, (233), p. 5.

114. *Ibid.*, p. 4.

115. Gov. Gen.-in-Counc. to Wood, 2 Feb. 1861 (P.W. Rly. Dept. No. 5), *ibid.*, p. 29.

116. Report to the Sec. of State for India in Counc. on Rlys. in India for 1860-61, *Parl. Pap.*, (H.C.), 1861, XLII, (2826), p. 11.

117. Gov. Gen.-in-Counc. to Wood, 5 Feb. 1861. *Parl. Pap.*, (H.C.), 1861, XLIII, (233), p. 9.

118. Wood to Gov. Gen.-in-Counc., 2 May 1861, *ibid.*, p. 25.

119. Report to the Sec. of State for India in Counc. on Rlys. in India for 1861-62, *Parl. Pap.*, (H.C.), 1862, XL, (3009), p. 8.

the contract for which branch line was concluded in 1858.¹²⁰ But since that proposal did not meet the approval of the Government, the issue of debentures was suggested, as the state of the money market was stated to be not suitable for the additional shares being placed.¹²¹ Thus in debenture loan, £ 1,000,000 was raised.¹²² The financial stringency of the period also forced the Railway Company to renew the debentures issued in 1854 and repayable in July 1859 as they were not able to issue stock to meet this payment.¹²³ They also asked for a discretionary power to raise the rate of interest in these renewals from 4½% to 5% increases where the holders would decline to renew at the former rate.¹²⁴

During the far more critical conditions of 1860-61, the operations of the Company in India were affected to a greater extent. In line with the decision of the Government of India, the work of construction on the Jubbalpore line was postponed.¹²⁵ The work of construction on the main line was stated to have progressed to such an extent that suspension would have resulted in serious loss in the form of damage to and destruction of, valuable materials left to the whims of nature.¹²⁶ The fact that this large amount of capital already invested would remain unprofitable for an indefinite period of time was also another reason against suspending work on the main line.¹²⁷ Besides, the political circumstances of the period demanded the quick completion of the main line to Delhi. The Mutiny opened the eyes of the authorities to the speed, comfort and safety of the transport of troops by means of railways.¹²⁸ The importance of a

120. Noad to George Clerk, 2 Feb. 1859, Rly. Home Corrs., 'C', Register I, Vol. I.

121. *Ibid.*

122. Noad to Melvill, 1 March 1859, *ibid.*

123. Noad to George Clerk, 25 May 1859, *ibid.*

124. *Ibid.*

125. The E.I. Rly. Co. to E. Palmer, their Agent in India, 10 June 1861, *ibid.*

126. Report to the Sec. of State for India in Council on Rlys. in India for 1860-61, *Parl. Pap.*, (H.C.), 1861, XLII, (2826), p. 28.

127. *Ibid.*

128. *Ibid.*

through line of railway from Calcutta towards the Upper Provinces—the scenes of violent upheaval during 1857—must have been all the more realised. We may here recall the statement of Dalhousie in 1853 who was referring to the importance of a railway in the event of a foreign attack—"Touching every important military station from Calcutta to the Sutlej, connecting every depot, Allahabad, Agra, Delhi, Ferozepore, with the arsenal in Fort William, it would enable the Government of India to assemble upon either threatened frontier, or, if it were necessary, upon both, an amount of men and materials of war amply sufficient to deal with any such emergency and within a period which would be measured by days ; whereas months must elapse, with the present means, before the same extent of military defence can be provided."¹²⁹ The famine in the N. W. Provinces showed the importance of a railway line operating throughout the distance from Calcutta to Delhi in the relief of the famine-stricken people.¹³⁰ The supply of cotton to England from sources other than the United States became vital as we have seen and the cotton-fields of the N. W. Provinces opened up by a line of railway from Upper India to the port of Calcutta, along with the similar sources in the Deccan, served by the Great Indian Peninsular Railway might have added substantially to that supply.¹³¹ The decision was to employ all the resources available for the vigorous prosecution of the works on the Delhi line.¹³² With improving conditions in the English money market, the Railway Company was able to raise sufficient capital and the suspension of works on the main line as apprehended in the previous year,¹³³ was avoided. The financial trouble of 1862-63 might be described as a sequel to the earlier difficulty of 1861-62. Advances to the amount of £243,580

129. Dalhousie's Minute, 20 April 1853, *Parl. Pap.*, (H.C.), 1852-53, LXXVI, (787), p. 118.

130. Report to the Sec. of State for India in Council on Rlys. in India for 1860-61, *Parl. Pap.*, (H.C.), 1861, XLII, (2826), p. 28.

131. *Ibid.*

132. The E.I. Rly. Co. to Palmer, 10 June 1861, Rly. Home Corrs., 'C', Register I, Vol. I.

133. Govr. Gen.-in-Council to Wood, 2 Feb. 1861, (P.W. Rly. Dept. No. 5), *Parl. Pap.*, (H.C.), 1861, XLIII, (233), p. 28.

were made by the Government of India to help the E.I. Rly. Co. to carry on its works.¹³⁴

The financial crisis in England in the year 1866 affected a little adversely the progress of the railway construction in India. Throughout the period of the Civil War in America (1861-65), business in England suffered. It meant the reduction of supplies to that country which, under normal circumstances, formed a substantial percentage of the total British exports. The buying of cotton from other war-time markets as already referred to, resulted in the heavy drainage of gold from England. Money became dear in England and the Bank rate rose. From the end of the year 1864, a downward trend in the prices and the consequent slackening of business was noticeable. The Bank rate started to decline during the first nine months of this year. During the last quarter of this year there was a sudden rise in the British exports to America following the conclusion of the war there. This sudden expansion of business, being not proportionate to the capacity of the money market, caused a stringency which was followed by panic.¹³⁵ The Bank rate rose to 10 p.c.¹³⁶ Under these circumstances, more than one Railway Company operating in India found difficulties in raising their capital.¹³⁷

By this year i.e., 1866-67, the constructive operations on the E.I.R. were drawing to a close. As we shall see later on, the entire line from Howrah to Delhi was opened since the year 1865¹³⁸ and the Jubbulpore branch also started to operate since 1867.¹³⁹ The only major work which was still to be finished was the chord line, the estimated cost for which was £ 2,000,000. The need for capital for the E.I.R. was naturally decreasing, as a result of which this Railway Company did not have to face

134. Report to the Sec. of State for India in Council on Rlys. in India for 1863-64, *Parl. Pap.*, (H.C.), 1864, XLIII, (3354), Table on p. 8.

135. Clapham, *An Economic History of Modern Britain, 1850-1886*, Vol. II, *op. cit.*, p. 375.

136. *Ibid.*

137. Report to the Sec. of State for India in Council on Rlys. in India for 1866-67, *Parl. Pap.*, (H.C.), 1867, L, (3856), p. 1.

138. *Infra*, Chap. V, p. 138.

139. Report to the Sec. of State for India in Council on Rlys. in India for 1867-68, *Parl. Pap.*, (H.C.), 1867-68, LI, (4035), p. 26.

any major financial crisis during this year. But, still the financial stringency of the period induced the Railway Company to make a searching enquiry into the position of its works in India, the object of which was to put some check on the future demands for capital for this undertaking. A. M. Rendel, the Consulting Engineer to the Railway Company in England was deputed to India with that purpose and the result of his mission also was quite satisfactory.¹⁴⁰

Thus, we see that the periods of financial stringency in England exercised a depressive effect on the financial operation and position of the E.I.R. In the critical year of 1860-61, the operations of some other guaranteed companies also suffered. The dearth of capital led to the postponement of the construction of the Delhi-Lahore line, 240 miles, which was in the Punjab Company's scheme, and also of the Sholapore-Bellary line, 183 miles, which was partly in the scheme of the Great Indian Peninsular Railway Company and partly in that of the Madras Railway Company.¹⁴¹

The question may arise here—what was the contribution of the people of India towards financing one of its earliest trunk railways. The striking point here is that the amount of contributions from India was negligible and even of that contributed there a very small fraction came from Indians. On 31 December 1860 when roughly 15 years had elapsed since the E. I. Rly. Co. was formed, the total number of proprietors of this Company was 6,394 of whom 232 were registered in India and the number of Indian proprietors there was only 75.¹⁴² Another five years later, i.e., on 31st December 1865, the total number of proprietors of this Company in England was 10,103 while the number registered in India was 259 of which, only 113 were Indians.¹⁴³ In 1870, when the constructive operations on the E.I.R. were drawing to a close, these numbers were 14,330,

140. Report to the Sec. of State for India in Council. on Rlys. in India for 1867-68, *Parl. Pap.*, (H.C.), 1867-68, LJ, (4035), p. 26.

141. Report to the Sec. of State for India in Council. on Rlys. in India for 1860-61, *Parl. Pap.*, (H.C.), 1861, XLII, (2820), p. 6.

142. *Ibid.* p. 16.

143. Report to the Sec. of State for India in Council. on Rlys. in India for 1865-66, *Parl. Pap.*, (H.C.), 1866, LII, (3696), p. 6.

360 and 126, respectively.¹⁴⁴ The amount raised in England up to 31 December 1859 for this railway was £13,372,644 and up to about the same period, the amount raised in India was £239,213.¹⁴⁵ In fact, the total native capital employed in the railways as a whole in India was insignificant. Towards the end of 1859, out of a capital of £52,430,000 estimated to be required for all the railways which were sanctioned, only £625,971 had been subscribed in India.¹⁴⁶ In 1860, Danvers reported that out of every million of railway money which was raised for railways in India, about £976,500 was subscribed in England.¹⁴⁷ In 1870 while the total number of proprietors in England for Indian railways as a whole was 51,079, the number registered in India was 808 and of that only 368 were natives of India.¹⁴⁸ Even beyond our period in 1882, nearly 99% of the capital raised by the guaranteed companies continued to be registered in England, and most of the remaining part came from the Europeans resident in India.¹⁴⁹

This was the situation in spite of the fact that from the very beginning the policy of the Court of Directors had been to encourage the employment of indigenous capital in the construction of railways in India. In the contracts between the East India Company and the railway companies, provision was made for the payment into the treasuries of the Government of India of such portion of the capital as would be raised by calls from shareholders resident in India.¹⁵⁰ The number of allotments in India was limited to 5000 in the beginning. That limit was withdrawn by the middle of 1859 and the Agent of the Company in India was given the authority to sanction any allotment that

144. Report to the Sec. of State for India in Council on Rlys. in India for 1870-71, *Parl. Pap.*, (H.C.), 1871, LI, (C. 418), p. 15.

145. Report to the Sec. of State for India in Council on Rlys. in India to the end of 1859, *Parl. Pap.*, (H.C.). 1860, LII, (2669), p. 24.

146. *Ibid.*

147. *Ibid.*

148. Report to the Sec. of State for India in Council on Rlys. in India for 1870-71, *Parl. Pap.*, (H.C.), 1871, LI, (C. 418), p. 15.

149. Report to the Sec. of State for India in Council on Rlys. in India for 1881-82, *Parl. Pap.*, (H.C.), 1882, XLIX, (C. 3328), p. 23.

150. See for instance, the text of the Contract between the East India Company and the E.I. Rly. Co., 17 August 1849, clause 6, *Parl. Pap.*, (H.C.), 1859, XIX, (259), pp. 5-6.

he could make.¹⁵¹ About the middle of 1855, an act was passed which removed the several legal restrictions on the registration of shares in India.¹⁵² The short and local lines, the Court desired, should be built entirely out of the local capital. With reference to such lines, the Court expressly stated in July 1856 ".....native capitalists will eventually be induced to supply the means of carrying out such valuable improvements in their respective neighbourhoods,.....",¹⁵³ and the Government of India was asked to adopt the necessary measures for encouraging such enterprises.¹⁵⁴ Referring to the same question, the Court again wrote in 1858, ".....it is of that description of railway which we hope may as the trunk lines are established be constructed out of funds contributed by landholders and others in order to supply local wants and to develop the capability of districts not immediately traversed by the main roads".¹⁵⁵ During our period, the response from the local inhabitants of India was not notable as we have seen. Proposals for short branch lines were sometimes made by the wealthy local people. For example, in the very early period, Dwaraka Nath Tagore proposed to raise one-third of the capital for the line to Raniganj collieries.¹⁵⁶ The inhabitants of Santipur in July 1856 proposed to pay the cost of a branch line of railway between Kalna and Magra in Burdwan and Hooghly districts respectively, from the main line of the E.I.R.¹⁵⁷ In 1858 there was a similar proposal for the construction of a branch line from the main line of the E.I.R. to the collieries of Babu Govind

151. Copy of the letter No. 208 addressed by the Railway Company, to their Agent in India (date not given), encl. to Noad to Melvill, 11 July 1854, Rly. Home Corrs., 'A', Vol. IX.

152. Fin. (Rly.) Des. to, 13 Sept. 1854, No. 17, Rly. Des. Beng. Ind., Vol. II, pp. 47-48.

153. Fin. (Rly.) Des. to, 16 July 1856, No. 21, *Ibid.*, p. 255.

154. *Ibid.*

155. Fin. (Rly.) Des. to, 1 Sept. 1858, No. 42, *ibid.*, (no page mark given).

156. W. Theobald, Hon. Sec. of the Calcutta Committee of the E.I. Rly. Co. to Stephenson, (no date given), Stephenson's *Report etc.*, *op. cit.*, p. 37.

157. Fin. (Rly.) Des. to, 16 July 1856, No. 21, Rly. Des. Beng. Ind., Vol. II, pp. 254-255.

Prasad Pandit.¹⁵⁸ But, in most cases, such proposals did not materialise. Poverty, indifference to business pursuits as a whole, landed property being regarded as more attractive, and ignorance might be cited as the reasons for the non-availability of indigenous capital. The whole thing was a sad commentary on the instructions of the Court of Directors in 1849 that the payments of capital in India should be limited to such sums as should be required for the expenditure of the Railway Companies there from time to time, so that the Government of India would not be placed under the necessity of remitting any portions of such monies to England which might interfere with the opportunities of transmitting finance to meet its English expenses.¹⁵⁹ We append a list of the capital raised in India for the E.I.R. during the period 1848-49 to 1864-65.¹⁶⁰

So far as the question of the capital requirements of the E.I. Rly. Co. is concerned, the last point that we would discuss is how the Indian expenses of this Railway Company were met. We have seen that the capital of the E.I. Rly. Co.—like that of all other guaranteed railway companies operating in India during this period, was raised for the most part in England. A large part of this capital was expended in England for the purchase of railway materials and on account of the home establishment of the railway companies. Apart from this expenditure in England, the Indian expenditure of all these railway companies also was not negligible. It comprised various items including establishment cost, purchase of secondary materials like brick, lime, stone etc., employment of unskilled labour and conveyance of materials inland, and so on. The Indian expenditure in the case of the E.I.R. in the sixties when the work of construction was going on in full swing over the greater part of this line, may be referred to here. Thus, during the period between 1 May 1860 and 28 February 1861, this amounted to £1,816,354.¹⁶¹ In the corresponding periods in the succeeding

158. Fin. (Rly.) Des. to, 1 Sept. 1858, No. 42, Rly. Des. Beng. Ind., Vol. II, (no page mark given).

159. Fin. Letter to India, 14 Nov., 1849, No. 27, Rly. Des. Beng. Ind., Vol. I, p. 3.

160. Appendix II.

161. Report to the Sec. of State for India in Council on Rlys. in India for 1860-61, *Parl. Pap.*, (H.C.), 1861, XLIII, (2826), p. 10.

financial years of 1861-62, 1862-63, 1863-64, and 1864-65, this expenditure was £ 1,697,643,¹⁶² £ 1,119,514,¹⁶³ £ 801,944¹⁶⁴ and £ 504,876.¹⁶⁵ Money raised in India fell far short of the amount needed there.¹⁶⁶ Under these circumstances, the system that was generally adopted in respect of all these guaranteed companies was that the deficiency in the capital required in India was to be met out of the advances by the Government of India. The monthly returns of these advances were sent to England by the Government of India. The equivalent amount in sterling, estimated at the contract rate of exchange¹⁶⁷ was deducted from the capital deposited in the treasury of the East India Company in England by the respective railway companies. These were expended towards meeting the English expenses of the Government of India,¹⁶⁸ including the payment of the guaranteed interests to shareholders resident in England, which, under the contract, was a burden on the revenues of India as long as the lines failed to earn an equivalent amount of profits.¹⁶⁹ In years of financial stringency in India, rendering it difficult for the Government of India to meet its home charges, this system, of course, could not be put into operation, and in such years, there was no other way but to send large amount of bullion to India to meet the Indian expenses of the railway companies there. In our period, such a situation did arise in the early sixties the financial stringency of which years we have

162. Report to the Sec. of State for India in Council on Rlys. in India for 1861-62, *Parl. Pap.*, (H.C.), 1862, XL, (3009), p. 9.

163. Report to the Sec. of State for India in Council on Rlys. in India for 1862-63, *Parl. Pap.*, (H.C.), 1863, XLIII, (3168), p. 7.

164. Report to the Sec. of State for India in Council on Rlys. in India for 1863-64, *Parl. Pap.*, (H.C.), 1864, XLIII, (3354), p. 8.

165. Report to the Sec. of State for India in Council on Rlys. in India for 1864-65, *Parl. Pap.*, (H.C.), 1865, XL, (3521), p. 14.

166. See, for instance, the statement of capital raised in India for the E.I.R. during the period 1848-49—1864-65. Appendix II.

167. The contract rate of exchange was 1s 10d per Company's rupee cf. the text of the contract of 17 August 1849, *Parl. Pap.*, (H.C.), 1849, XIX, (259), p. 9.

168. Report to the Sec. of State for India in Council on Rlys. in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (2669), p. 24.

169. *Ibid.*

already referred to.¹⁷⁰ Greater expenses and lesser incomes of these years made it difficult for the Government of India to meet even all its local expenses. Railway construction along with some other administrative charges resulted in the heavy import of bullion into India during these years.¹⁷¹

Thus, in the course of our discussion of the capital requirements of the E.I.R., we see that this railway was an expensive undertaking, involving large capital expenditure. To secure this money, dependence had to be made on English money market. But, during the initial years of the history of this undertaking, widespread doubts and mistrusts in England in the possibilities of Indian railways as a whole, stood in the way of steady flow of capital from there. However, along with the beginning of the construction and working of even short, experimental portions of different railways in India, these doubts and mistrusts were gradually being removed and almost the entire capital needed for the E.I.R., as also for all other guaranteed railways in India during this period, came from English money market.

SECTION II

The extent of the profitability of the E.I.R. : its rates and fares.

The question that we would examine now is whether the lines built by the E.I. Rly. Co. were profitable from the commercial point of view during our period. The importance of the question under the circumstances in which the railway history of India began, is undeniable. On the success of these earlier projects, depended the further extension of railways in India. Money for the railways in India during this period was to come from the English money market. Guaranteed interest, obviously, was the only incentive to these English investors. The Government agreed to the guaranteed interests with the obvious expectation that the amount due on this account was to be gradu-

170. *Supra*, pp. 36-39.

171. Rep. to the Sec. of State for India in Council. on Rlys. in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (2669), p. 24.

ally met out of the profits of the lines opened.¹⁷² If in the case of these earlier projects, prospects were found to be not so encouraging in this respect, it is doubtful whether the Government would have agreed to further extensions of the system under the same terms. Under these circumstances, investment of capital without guarantee might well have been an impossibility.

The first thing to be made clear is—what should be the criterion of profitability in this case. An investment can be said to be successful from the commercial point of view when its receipts, after covering all its current expenses, leave a steady margin of profits over a reasonably long period. But, that only cannot be the standard here. The special nature of the terms under which the railways of this period in India were contracted for, leads to the special criterion for judging their profitability. In all these cases, as we have noted, the rate of guaranteed interest was 5%¹⁷³ and this interest was to be payable from the day the capital was deposited.¹⁷⁴ As long as the capital remained unproductive, the Government was to make the full payment on this account out of the revenues of India and after the lines were opened, it was to make up the deficiency as long as the lines failed to earn that much profits. In judging the profitability of any of these undertakings then, the minimum standard should be its ability to earn that amount of profits which covered the payment due on account of 5% guaranteed interests and thus, to relieve the Government of the burden of this payment. The line being able to repay the former advances by the Government on this account as required under the contract,¹⁷⁵ might be taken as the further proof of its profitability. But, this clause was later repudiated in the case of the most of the undertakings in return for certain concession.¹⁷⁶

It was from the late sixties that the profits from the E.I.R.

172. *Supra*, pp. 28-29.

173. *Ibid.*

174. See, for instance, the text of the Contract between the East India Company and the E.I. Rly. Co., 17 August 1849, *Parl. Pap.*, (H.C.), 1859, XIX, (259), p. 8.

175. *Supra*, p. 29.

176. Report to the Sec. of State for India in Council on Rlys. in India for 1869-70, *Parl. Pap.*, (H.C.), 1870, LIII, (C. 163), p. 5.

began to reach the guaranteed rate of 5% and even to exceed it. In the financial year 1866-67, this Company was first able to declare a dividend exceeding the guaranteed rate of 5%. The surplus profits amounted in that year to $\frac{1}{2}$ % and half of that amount went to the Government treasury in repayment of the former advances.¹⁷⁷ The standard thus arrived at was maintained more or less in the succeeding years. This was also the case with the Great Indian Peninsular Railway Company which declared a dividend higher than the guaranteed 5% for the first time in 1866-67.¹⁷⁸ Amongst all the guaranteed companies of this period, these two were the pioneer ones to reach this standard.

The fact that the profits of even a single railway company did not exceed the guaranteed rate of 5 p.c. before 1866-67 may seem disappointing.¹⁷⁹ Taking the instance of the E.I.R., apparently it does not seem to be a great achievement that this railway, the construction of which was begun as early as 1851, took such a long time to earn that rate. But, if we go deeper into the circumstances of the construction and working of the line, it becomes clear that the financial results achieved by this undertaking from the very beginning really showed a very high degree of commercial profitability.

The first thing to remember here is that in the first few years, the proportion of the profits was bound to fall far short of the total amount of the guaranteed interests due on the capital invested from time to time. So far as profits and losses were concerned, the entire undertaking was regarded as one scheme.¹⁸⁰ The situation that emerged was that the amount of capital deposited and expended went on increasing year after year as the decisions for further extensions were taken. The amount of guaranteed interests due on that also went on accumulating, which was due, as we have referred, from the day the capital

177. Report to the Sec. of State for India in Council on Rlys. in India for 1866-67, *Parl. Pap.*, (H.C.), 1867, L, (3856), p. 18.

178. *Ibid.* p. 18.

179. W. J. Macpherson, 'Investment in Indian Railways, 1845-1875', *Economic History Review*, 2nd Series, Vol. VIII, (December 1955), No. 2, p. 181.

180. Noad to Melville, 26 July 1853, *Parl. Pap.*, (H.C.), 1854, XLVIII, (318), p. 12.

was deposited. But, the work of construction, though begun all over the line, was not progressing due to various reasons as we shall see later on¹⁸¹ and the opening of the different portions of the line was delayed. The result was that for a long time the productive capital was in a much lesser ratio with unproductive capital. This means that the profits earned over a part of the line which was opened, were distributed over the entire capital invested in that line—both operating and under construction. Naturally, the percentage of profits attained was low. Up to October 1858, the only portion of the line opened was the experimental line—about 121 miles¹⁸² while the work of construction had been started over the entire line excepting the portion in Delhi district.¹⁸³ In the succeeding years, other parts of the line were opened but at the same time, the construction of further extensions also were decided—the important ones being the Jubbulpore branch and the Chord line.¹⁸⁴ It is also not irrelevant to point out here that the cost of construction was far higher in the upper sections of the line to Delhi than that in its lower sections. Thus, the cost per mile of the experimental line which was first opened to the traffic was estimated in 1857 at £14,309¹⁸⁵ while that in some portions of the upper sections was estimated in 1868 at upwards of £30,000.¹⁸⁶ Since the latter were opened to the traffic later, the proportion of productive and unproductive capital became much greater. The reason for the higher cost in the upper sections lies in the fact that the causes which we have referred to as responsible for the high capital cost of the entire undertaking,¹⁸⁷ were more ap-

181. *Infra*, Chap. V.

182. Impressions of Lord Elgin, Gov. Gen. upon the undertaking as mentioned in Report to the Sec. of State for India in Council, on Rlys. in India for 1862-63, *Parl. Pap.*, (H.C.), 1863, XLIII, (3168), p. 12.

183. *Infra*, Chap. V, pp. 132-133.

184. *Ibid.* p. 138.

185. Report of George Turnbull, the Chief Engr. of the E.I. Rly. Co. in India, and Rendel on the cost of construction of the experimental line as referred to in Fin. (Rly.) Des. to, 18 March 1857 No. 10, Rly. Des. Beng Ind., Vol. II, p. 36.

186. Report to the Sec. of State for India in Council, on Rlys. in India for 1867-68, *Parl. Pap.*, (H.C.), 1867-68, LI, (4035), p. 15.

187. *Supra*, pp. 35-36.

plicable to the upper sections than to the lower ones. As we shall see in our chapter on construction, the railway works in the up-country districts of Allahabad and Son suffered immense loss in materials and time during the Sepoy Mutiny in 1857.¹⁸⁸ The cost of the transport of materials was becoming higher as the railway line pushed upwards to Allahabad and the districts to the west of it.¹⁸⁹ The number of bridges and viaducts was the largest in the portion of the line from Burdwan to Mirzapur via Rajmahal and above Mirzapur, there were two large bridges over the river Jumna—one at Allahabad and the other at Delhi, the cost of which was high.¹⁹⁰ It was not until the year 1871, that, with the opening of the chord line,¹⁹¹ the entire capital invested became productive. So, actually, we should base our judgment on the profitability of the line on the financial results achieved since that year. In the seventies, as we have referred to, the net profits earned by this line in most of the years exceeded to a considerable extent the guaranteed rate of interests. That this standard was attained in 1866-67—when the capital investment was still going on—is rather remarkable in this context.

If we relate the profits earned over, and the capital invested in, a particular section of the line only, we find that the results achieved were, from the beginning, highly encouraging. As for instance, the experimental line was functioning since February 1855.¹⁹² The receipts from both goods and passengers were continuously on the increase. In the half year ending June 1857,—i.e., roughly within two years—this line was yielding a net revenue of 6%, upon the then highest estimate of its cost, viz., £1,500,000.¹⁹³ Noad said in 1858 that taking the cost of this line at about £10,000 a mile, the then profits of it would give a return of 6½%, i.e., nearly 2% in excess of the

188. *Infra*, Chap. V, pp. 139-140.

189. *Ibid.* pp. 136-137.

190. *Ibid.* pp. 235-236.

191. Report to the Sec. of State for India in Council on Rlys. in India for 1870-71, *Parl. Pap.* (H.C.), 1871, LI, (C. 418), p. 3.

192. *Ibid.*, p. 218.

193. Fin. (Rly.) Des. to, 6 April 1858, No. 13, Rly. Des. Beng. Ind.. Vol. II, p. 267.

guaranteed rate.¹⁹⁴ For the half year ending 31 December 1859, the net receipts from this line, the length of which had increased by this time by about ten miles, amounted to £66,425 which would produce a dividend at the rate of £7.14s.10d. per cent per annum on a capital amounting to £1,716,000, i.e., nearly 8%.¹⁹⁵

The extent of profitability achieved on the experimental line of the E.I.R. from the beginning seems all the more remarkable when we think of the handicaps with which this line was working in these early years—handicaps some of which are common to the first opening of such an undertaking generally, and some of which were peculiar to this particular line during this period. It is a commonplace experience with most of the commercial undertakings—large and small—that they are not remunerative since the day they start operating. An initial period of low returns generally elapse due to lack of experiences as regards the economical working and the means of exploiting the existing sources of revenue. This fact is more applicable to railways because of the gigantic nature of these undertakings where the prospective revenues depend upon so many factors including the original cost incurred, good management, the trade of the country and the extent and habits of the population, the maintenance cost, the working expenses, the question of rates and fares and so on. Lack of experiences was the key-word as regards the working of the particular line under discussion as is also suggested by its very name “experimental line”. Here we can recall again the initial doubts and mistrusts and various misconceptions persisting in England in the forties as regards the practicability of railways in India. Besides, in these early years, there were certain disadvantages peculiar to this particular part of the line. The working expenses were bound to be greater at least in 1855, the first year of its operation, because of the heavy cost of fuel. Indigenous coal had not been as yet started to be used as fuel and the coke imported from Great

194. Minutes of Evidence taken before the Sel. Com. on East India (Rlys.), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 61, Q. 939.

195. Report to the Sec. of State for India in Council on Rlys. in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (2669), p. 32.

Britain was the main fuel used¹⁹⁶ and the working cost remained high. In 1855, the proportion of the working expenses to gross receipts on this line was 67.677.¹⁹⁷ Besides, the traffic forthcoming was only the local traffic between Calcutta and Burdwan. After running for some distance parallel to the Ganges, the line took a left turn towards the Burdwan collieries¹⁹⁸ and there was no reason why the through traffic between Calcutta and Upper India along the Ganges—the main trade route of Northern India—would avail of this limited railway transport entailing the troubles and expenses of reshipment.¹⁹⁹ The want of sufficient rolling stock also was complained of in these early days of its working for which goods traffic available could not be exploited to the fullest extent.²⁰⁰

In fact, from the very beginning, on the basis of the results achieved on the experimental line, high hopes were held as regards the profitability of the entire line of the E.I.R. The Court of Directors regarded the statements of revenue and expenditure of the E.I.R. for the half year ending 31 December 1855 as satisfactory "not only as regards the present results, but likewise as respects the future prospects of the undertaking".²⁰¹ Danvers commented in 1858 that none of the experimental lines which were then open in India, including the one to Raniganj, could give an adequate idea of what the ultimate amount of profit might be expected from the entire undertakings since none of them actually ran into what might be termed the producing districts.²⁰²

To lend more strength to our contention, we should take up a section in the Upper Provinces as well where the capital expenditure was far greater than that in the experimental line—the lesser capital expenditure in the latter case obviously contri-

196. *Infra*, Chap. VI, p. 146

197. Report to the Sec. of State for India in Council on Rlys. in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (2669), p. 31.

198. *Infra*, Chap. III, pp. 74-75.

199. *Infra*, Chap. V, pp. 126-127.

200. *Infra*, Chap. VI, pp. 148-149.

201. Fin. (Rly.) Des. to, 18 March 1857, No. 10, Rly. Des. Beng. Ind., Vol. II, p. 31.

202. Minutes of Evidence taken before the Sel. Com. on East India (Rlys.), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 21, Q. 297.

buting to some extent to the financial results achieved there. The difficulty here is that the traffic results of any isolated section in the Upper Provinces for a consecutive period of years are not available. These sections were opened to the public almost one after another and the traffic results are always shown together. In the case of the section from Allahabad to Cawnpore, 123 miles, however, the traffic results of the first two financial years of its working are available and all that we can do is to compare them with the results achieved in the case of the experimental line during its first two financial years of working, and the result of such comparison is not at all discouraging. Thus, in 1855-56, the first complete financial year in which the entire experimental line from Howrah to Raniganj worked, the net profits earned on this line amounted to £ 48,412-1-7.²⁰³ And in 1859-60, the first complete financial year in which the entire line from Allahabad to Cawnpore operated, the net profits over this line were £ 38,922-8-1.²⁰⁴ In the year 1856-57, the net earnings of the experimental line rose to £ 69,484-3-7²⁰⁵ and in 1860-61, the net profits over the line from Allahabad to Cawnpore also rose to £ 61,441.²⁰⁶

The question of the commercial profitability of any railway line is closely inter-related with its rates and fares and so, we may make a special mention here of the extent to which the rates and fares fixed for the E.I.R. helped in achieving a high degree of profitability. Under the contracts with these early guaranteed railway companies including the E.I. Rly. Co., the Government had the right of fixing the fares in the first instance, leaving to them the right of suggesting necessary alteration that might be desirable.²⁰⁷ The Government also reserved to itself the right of requiring a reduction in the rates when the

203. Report to the Sec. of State for India in Council on Rlys. in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (2669), p. 11.

204. Report to the Sec. of State for India in Council on Rlys. in India for 1860-61, *Parl. Pap.*, (H.C.), 1861, XLIII, (2826), p. 18.

205. Report to the Sec. of State for India in Council on Rlys. in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII (2669), p. 11.

206. Report to the Sec. of State for India in Council on Rlys. in India for 1861-62, *Parl. Pap.*, (H.C.), 1862, XL, (3009), p. 13.

207. See, for instance, the text of the contract between the East India Company and the E.I. Rly. Co., dated 17 August 1849, clause 8, *Parl. Pap.*, (H.C.), 1859, XIX, (259), pp. 5-6.

profits reached 10%.²⁰⁸ The aim of a railway under ordinary circumstances is to reach the widest classes in the area²⁰⁹ through which it passes, in the sale of its commodity of transportation²¹⁰ and this means that the rates and fares fixed for it should be of such a character as would leave it within the easy reach of the greater body of the people there. This was all the more important in respect of all these early railway lines in India since the question of commercial profitability was, as we have seen, vital in their case. Emphasising this point, the Court stated it explicitly in 1857 that, in fixing the rates and fares in Indian railways, the first and foremost consideration would be to have such rates as would make the lines remunerative.²¹¹

But, in these early years of railway operation in India, neither the Government nor the Railway companies were in a position to determine the exact rates and fares for the railways there which might be productive of the required standard of profitability. Naturally, the rates and fares which were fixed for different lines from time to time in our period, were taken to be purely experimental.²¹² One thing, however, was taken to be certain : the rates in India should be low enough to induce the people there to make use of the railways.²¹³ Actually, the rates on these original railway lines in India were much lower proportionately when compared to those on the English railways during the same period. The third class passenger fare, paid

208. See, for instance, the text of the contract between the East India Company and the E.I. Rly. Co., dated 17 August 1849, clause 8, *Parl. Pap.*, (H.C.), 1859, XIX, (259), pp. 5-6.

209. To ensure the commercial profitability of a railway, even before the question of its rates and fares comes in, great attention is to be paid to the selection of the area through which it would pass. This is related to the problem of the selection of the line and is, accordingly, dealt with in the relevant chapter.

210. S. C. Ghose, *A Monograph on Indian Railway Rates*, (Calcutta 1918), p. 1.

211. Fin. (Rly.) Des. to, 29 April 1857, No. 17, Rly. Des. Beng. Ind., Vol. II, p. 68.

212. Report to the Sec. of State for India in Council in Rlys. in India for 1872-73, *Parl. Pap.*, (H.C.), 1873, L, (C. 838), p. 30

213. For instance, Report by the Constg. Engr. (Baker) to Govt. (Rly. Dept.), on the result of his examination of certain lines or railways in the Bengal Presidency, during the cold season of 1852-53, dated 15 March 1853, *Parl. Pap.*, (H.C.), 1852-53, LXXVI, (787), p.11.

on the Great Northern Railway, which was the cheapest in England, was 8s 4d in 1864 for a 100 mile journey. The third class passenger fare for the same distance on the E.I.R. during that year was stated to be only 3s 1d.²¹⁴

But, as proved by later experiences, the rates and fares not only on the E.I.R. but also on all other railways of the period, remained high during our period, judging them by Indian standard. This was borne out by the fact that even if railways were operating in the vicinity, a great part of the traffic both in goods and passengers in different parts of India was still resorting to the existing means of communication.²¹⁵ Danvers wrote in 1864—"But it is possible that the rates may have been raised a little too high, and that more traffic might have been taken, at a less profit per passenger or per ton of goods, and yet so as to produce greater aggregate profits".²¹⁶ The first important reductions, of course, were made as late as 1876-77 and those related to rates for goods. The average sum received for carrying a ton per mile on the E.I.R. was 1.013 pence in 1875-76 while in 1876-77, it was reduced to 895d.²¹⁷

All these surely prove once more the great remunerative capabilities of the E.I.R. The commercial results achieved on this line even when rates were high, were quite satisfactory and more moderate rates might have resulted in its being far more remunerative.

Of all these early projects for railways in India, the E.I.R. was described to be the most prosperous one.²¹⁸ The E.I.R. along with the Great Indian Peninsular Railway were the first Indian railways to earn profits amounting to the guaranteed rate of 5%. But, the mileage receipts of the former were even greater than those of the latter. The average net receipts per mile from the E.I.R. during 1857-1861 were £636 while that from the

214. Ghose, *op. cit.*, pp. 7-8.

215. Minute by Sir Richard Temple, Lieut. Govt. of Bengal, 14 Jan. 1876. p. 56, *Bengal Administration Report*, (abb. Beng. Admn. Rep.) 1874-75.

216. Report to the Sec. of State for India in Council. on Rlys. in India for 1863-64, *Parl. Pap.*, (H.C.), 1864, XLIII, (3354), p. 14.

217. Ghose, *op. cit.*, p. 21.

218. Report to the Sec. of State for India in Council. on Rlys. in India for 1874-75, *Parl. Pap.*, (H.C.), 1875, LIV, (C. 1369), p. 33.

Great Indian Peninsular Railway during the same period were £351. These figures for these railways during the years 1862-1866 were £660 and £476, and for the years 1867-1871 were £999 and £611, respectively.²¹⁹

There were several factors in favour of the E.I.R. The most important of these was that the traffic available was far greater in its case. This railway line traversed the most prosperous part of the country—namely, the valley of the river Ganges. The population was densest there and it also contained important commercial centres and pilgrimages.²²⁰ It was also the longest line of railway. The working expenses were less due to easy gradients²²¹ and also lesser cost of fuel. The cost of fuel on this line was estimated at 2.26d in 1875 and though the same Burdwan coal was being used on the Great Indian Peninsular Railway as well, the cost, because of the transportation expenses, amounted as estimated in the same year, to 10d per train mile.²²² Of all the railways, the E.I.R. was noted for its good management. Referring to the management of the E.I.R., the Government of India states, “.....the rates for the carriage of certain staples have been reduced; local agencies have been established in some places as an experimental measure; tables of vernacular rates have been prepared for all stations and have been circulated in the districts. Over-charges and claims are promptly settled and goods are rapidly delivered”.²²³

The financial success achieved on the E.I.R. since the early days of its opening show that in this respect this undertaking might be fairly compared with the British railways operating during this period. In 1857, Baker, the Consulting Engineer to the Government of India, prepared a table exhibiting the results of Indian railways for the year 1856 in comparison with those of Great Britain for the year 1855. It showed that the number of passengers carried per mile on the E.I.R. which then stopped

219. Report to the Sec. of State for India in Council on Rlys. in India for 1871-72, *Parl. Pap.*, (H.C.), 1872, XLIV, (C. 643), p. 19.

220. *Infra*, Chap. III.

221. *Ibid.*

222. Report to the Sec. of State for India in Council on Rlys. in India for 1874-75, *Parl. Pap.*, (H.C.), 1875, (C. 1369), p. 32.

223. Report to the Sec. of State for India in Council on Rlys. in India for 1873-74, *Parl. Pap.*, (H.C.), 1874, XLIX, (C. 1070), p. 27.

at Raniganj, had already been about half of that of the average on the British lines. The average proportion of expenditure to receipts on the British lines was 48% while that on the E.I.R. was 40.62 per cent.²²⁴ That was the position when the experimental line had just opened while most of the British railways had been working for a number of years.

Thus, the investments made in the E.I.R. can be said to have reached a very high degree of profitability from the very beginning as is apparent from the fact that the profits rapidly increased with the opening of the line to traffic. This financial success of the E.I.R., one of the pioneering railway enterprises in India must be regarded as a land-mark in the entire railway history of India. This encouraged the further employment of capital in this sphere and thus, paved the way for the extension of railways in India.

224. Report to the Sec. of State for India in Council. on Rlys. in India for 1873-74, *Parl. Pap.*, (H.C.), 1874, XLIX, (C. 1670), p. 27.

CHAPTER III

PROBLEM OF SELECTION AND ROUTING OF THE LINE

The purpose of this chapter is to show how the problem of the selection of the lines of the E.I.R.—the lines that we have described in our first chapter, was dealt with. As is apparent from that chapter, the general directions of these lines were laid down in the respective contracts concluded between the Railway Company and the Government and the particular routing of them was to be decided, as stipulated in the contracts, by the latter. There were two aspects to this problem ; first, the motives which the Government had in projecting these lines and secondly, the actual routing of the lines with the object of realising these to their maximum limit. The problem of the selection of the lines of the E.I.R., viewed in these dual aspects, form the subject-matter of this chapter.

The importance of studying the problems relating to the selection of the routes of the original railway projects in India, of which the E.I.R. was one, lies in the objects they were expected to fulfil. The most striking point here is the diversity of these objects, which in fact, made the task of selecting the routes of these lines an arduous affair. Before we examine the actual detailed discussions that accompanied the routing of the E.I.R., it may be convenient to review briefly these general considerations that influenced the decision of the Government in laying down the routes of these original railway lines in India.

The primary consideration in the routing of these original railway lines was to make them commercially profitable. The question of the commercial profitability in respect of these early projects was of vital importance as we have already seen.¹ The Court of Directors, in their despatch dated 7th May 1845 to the Government of India—which was the first despatch on the subject of railways in that country as we have mentioned,² wrote—"The advantage of railroads is available only where pro-

1. *Supra*, Chap. II, pp. 48-49.

2. *Supra*, Chap. I, p. 5.

portionately large returns can be obtained to meet the great expense, first of constructing, and then of working them.”³ Dalhousie in 1853 put priority to this objective in the selection of the routes of these original railway projects in India, and stated that they must be remunerative by absorbing the existing traffic in goods and passengers.⁴ In 1852, J. P. Kennedy, the then consulting engineer to the Government of India, formulated certain rules for guiding railway construction in India, which would, in his own language, “seek to unite all considerations in the grand object of securing a remunerative return for the capital employed without which the progressive expansion of the principle involved cannot possibly be carried to the extent required by the interests of Indian people.”⁵

In order to make the lines pay, two things were necessary. In the first place, the cost of construction and working had to be minimised. Secondly, and more important than this, the lines must absorb the maximum traffic in goods and passengers and thus, ensure a steady financial return. The insistence on lessening the engineering problems in the lines to be selected,⁶ was apparently related to the fact that only a limited amount of capital was available for the construction works at least in the year 1849-50,⁷ and more, to the fact that there was a shortage of engineering talents in India.⁸ But, apart from these extraneous factors, the effect of these lesser engineering problems in the lines was to reduce the cost of construction per mile and thus leave a greater margin of profits. The lessening of the engineering problem was to lead, in some cases, to the lesser cost of working as well and the consequent higher profits. As for instance, an easy gradient meant higher train loads at a lesser working cost, the reason being the availability of the greater part of the tractive power of the engine for carrying the train

3. Court to Gov.-Gen.-in-Counc., 7 May 1845, (Legislative Dept. No. 11), *Parl., Pap.*, (H.C.), 1845, XXXIV, (327), p. 1.
4. Dalhousie's Minute, 20 April 1853, *Parl. Pap.*, (H.C.), 1852-53, LXXVI, (787), pp. 115-116.
5. Kennedy's Memorandum, 14 Sept. 1852, *Parl. Pap.*, (H.C.), 1854, XLVIII, (131), p. 10.
6. Dalhousie's Minute, 20 April 1853, *Parl. Pap.*, (H.C.), 1852-53, LXXVI, (787), p. 117.
7. *Supra*, Chap. II, pp. 25-26.
8. *Ibid.* p. 19.

load. That a very large coal traffic used to be carried about this time by the Yorkshire and Darlington line in England at a very cheap rate i.e., $\frac{1}{4}$ a penny per ton per mile, was mainly due to the fact of this line being practically level.⁹ Dalhousie insisted on the greatest attention being paid to the problem of obtaining such favourable gradients in respect of the railway lines in India as would leave the greatest tractive power in the engine available for moving its load of traffic along the line and thus, secure the utmost profits on its working.¹⁰

In order to ensure a steady traffic for the lines built, the need was felt for taking them through areas where they could absorb the maximum available traffic. That these original railway lines extended along the established trade-routes of the country, is explained very largely by the consideration of making them remunerative by carrying freight traffic. We have already referred to the great doubts entertained as regards the availability of passenger traffic in India¹¹ and naturally, all hopes were banked on the availability of traffic in goods, which, it was believed, was capable of further expansion. In the context of the availability of remunerative traffic for railways in India, the Court of Directors wrote in 1845—"Instead of a dense and wealthy population [as in England], the people of India are poor, and in many parts thinly scattered over extensive tracts

9. Minutes of Evidence taken before the Sel. Com. on East India (Rlys.), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 75, QQ 1159-1160.
10. Dalhousie's Minute, 20 April 1853, *Parl. Pap.*, (H.C.), 1852-53, LXXVI, (787), p. 136.
11. *Supra*, Chap. II, pp. 19-21 We have also mentioned in that chapter that both goods and passenger traffic were on the increase on the E.I.R. since it was opened. To show the increasing passenger traffic on this line, we may also refer to its traffic results. Thus, in the week ending on 16 September 1854, which was the first week of its operation, the number of the third class passengers was 4,300. In the corresponding weeks in the following few months, this number was 4546, 7119, 6747 $\frac{1}{2}$, 7327, 8993, 10,578, 10,648 and 15,201 respectively. All these show that the early apprehensions as regards the availability of passenger traffic in India were totally unfounded; Cf. Traffic results of the E.I.R. as mentioned in the Court's financial despatches to the Govt. of India, dated 19 Sept. 1855 No. 25, 12 March 1856, No. 10, and 25 June 1856, No. 20, Rly. Des. Beng. Ind., Vol. II, p. 116, p. 180 and p. 221.

of country. But, on the other hand, India abounds in valuable products of nature, which are in great measure deprived of a profitable market by the want of cheap and expeditious means of transport. It may therefore be assumed that remuneration for railroads in India must, for the present, be drawn chiefly from the conveyance of merchandise and not from passengers".¹² Furtherance of specifically British commercial interests and the general economic enrichment of the country through the development of her commerce, undoubtedly were questions of great importance and were inter-linked with the fulfilment of the primary motive of making the lines a profitable venture. Inter-related with this question of general economic enrichment, again, there was the expectation of social advancement.

As regards the part played by British commercial interests in the opening of India by means of railways, we have already referred to the pressure brought upon the Court of Directors in the matter of granting financial guarantee to the railway companies willing to undertake the work of construction in India.¹³ Along with the changing pattern of her industrial production since the Industrial Revolution and the partial adoption of the principle of Free Trade, Britain was seeking new markets for her surplus industrial products and also for sources from which her vast needs of raw materials could be met. It is true that throughout the eighteenth century, British investment in India formed a minor part of the total British sales and purchases abroad, far exceeded by that in her American colonies.¹⁴ But, the introduction of railways in India was followed by a large increase in the British exports to that coun-

12. Court to Gov. Gen.-in-Counc., 7 May 1845, (Legislative Dept. No. 11) *Parl. Pap.*, (H.C.), 1845, XXXIV, (327), p. 1.

13. *Supra*, Chap. II, pp. 23-24.

14. This can be corroborated with the help of following statistics :—

	Total Exports	Exports to plantations in America	Africa	India
1712-13	£7,352,655	£1,053,739	£111,805	£94,179
1750-51	£13,967,811	£1,911,700	£214,640	£798,077
1770-71	£17,161,146	£5,742,532	£712,538	£1,184,824

Ref : L.C.A. Knowles, *The Industrial and Commercial Revolutions in Great Britain during the Nineteenth Century* (London and New York, 1946), p. 30.

try—from £7,000,000 in 1851 to £10,000,000 in 1855,¹⁵ and in the eighties of the nineteenth century, India came to be the most lucrative market for British manufactures.¹⁶

At the same time there was much public discussion of the economic advancement and the enrichment of India that was to follow from the building of railways, and in the public mind, the question of increasing agricultural production and the quickening of trade and commerce in the country as a result of the railways were invariably related to those of social uplift. Dalhousie wrote in 1853,—“.....the establishment of a system of railways in India, judiciously selected and formed, would surely and rapidly give rise within this Empire to the same encouragement of enterprise, the same multiplication of produce, the same discovery of latent resource, to the same increase of national wealth, and to some similar progress in social improvement, that have marked the introduction of improved and extended communication in various kingdoms of the western world”.¹⁷ Assertions of this kind from different quarters, in fact, can be multiplied to any extent. Indeed in the eyes of at least one commentator these welfare elements in the construction of railways as social overheads were far more important than the purely business consideration. In 1853, for example, Major T. T. Pears of Madras Engineers commented that the British would be in danger of doing great injustice to the people of India by looking on these railway undertakings as mere commercial speculations and “by meeting every railway project with the condition that it shall at once pay its own expenses, together with the money laid out on its construction”.¹⁸ Pears went on :—“Its [i.e., the railway system which he described as “the most powerful of all known physical agencies”] operation upon the minds of the people is enough of itself to ensure all the rest, and great as may be the consequence of a large saving in the carriage of men and goods from point to point, the spread

15. Tooke and Newmarch, *op. cit.*, Vol. VI, p. 730.

16. Knowles, *op. cit.*, p. 196.

17. Dalhousie's Minute, 20 April 1853, *Parl. Pap.*, (H.C.), 1852-53, LXXVI, (787), p. 115.

18. Observations upon a Memorandum by Major Kennedy upon Indian Railways, by T. T. Pears, 1 Feb. 1853, *Parl. Pap.*, (H.C.), 1852-53, LXXVI, (787), p. 65.

of science and education will effect still more in promoting the material as well as the moral well-being of the people. these, the indirect results of the operation of railways, inestimable as they are, to be by far the most important".¹⁸

Along with these economic and social considerations, there were political considerations as well. The lines must serve the purposes of the state—both administrative and military. The British Empire in India was still expanding and railways could be of immense help in maintaining the hold of the centre over the far corners of these extensive territories. Even in the mid-nineteenth century, the British position in India was exposed to some serious threats—both external and internal. Externally, both the north-western and the eastern frontiers had been vulnerable points. On the western frontier, the most formidable enemy was Afghanistan.¹⁹ The termination of the First Anglo-Afghan War in the early forties did not put an end to the hostility with that country and her recent collusion with Russia, whose eastern ambitions, again, were causing grave concern amongst the administrative authorities in India for some time past, made the situation delicate. There were, in addition, two other independent states in this region—Kashmir and Nepal.²⁰ Besides, there was the newly conquered province of the Punjab and the work of consolidation in this province was still incomplete. The recent conquest of Pegu or the Lower Burma made the question of military defence on the eastern frontier as well an important one.²¹ Internally, that the situation was explosive was proved from the violent out-break of 1857. Railways, rendering easier the transport of troops from one place to the other, would be an immense help in meeting an emergency at any point, inland or on the frontiers and could also obviate the necessity of maintaining large military establishments in numerous places in the country. The financial involvement of the Government in the matter of railway construction in India through the instrumentality of the guaranteed interests, was a sufficient justification as to why it would want the railway lines

19. Dalhousie's Minute, 20 April 1853, *Parl. Pap.*, (H.C.), 1852-53, LXXVI, (787), p. 117.

20. *Ibid.*

21. *Ibid.*, p. 118.

to serve its purposes to some extent. In Major Kennedy's opinion, the Government would have been justified in giving financial guarantees to the railway companies on the ground alone of the increased efficiency of the Army and the reduced cost of military establishments and troops transportation through the railways. He went so far as to say that one-third of the nominal strength of the Indian Army could be dispensed with and went on to show that with his railway net-work 50,000 to 60,000 men supported fully by artillery and stores could be assembled in any one place in India within twenty to sixty hours. He also estimated the saving in military costs in Bengal alone at some £1,250,000 out of an annual budget of just under £5,000,000 (1848-1849).²²

About the mid-nineteenth century, Indian life in all these aspects, economic, social and political, remained circumscribed due to the primitive state of communications in the country. A complete lack of any constructive policy as regards the development of communications in the country characterised the greater part of the rule of the East India Company's Government in India. The reasons of this are best stated by Danvers in the following lines—"There were obvious reasons why we were backward in prosecuting public works in India. Wars, internal commotions, our political relations with native states, the settlement of newly-acquired territory, occupied and engrossed the attention of the Government and its officers".²³ The result of this inactivity was that communications in India remained as primitive as they had been through ages—namely, through country boats along rivers, most of them of poor navigability and through bullock carts along muddy country roads. Even in 1830, there was no road worth the name in India.²⁴ The state of communications in England on the eve of the railway age there, may be referred to here to show how far India lagged behind in this respect. Railways were a prime necessity in England, too, and yet she had a history of consistent develop-

22. Kennedy's Memorandum, 14 September 1852, *Parl. Pap.*, (H.C.), 1854, XLVIII, (131), pp. 5-6.

23. J. Danvers. 'Indian Railways', *Journal of the Society of Arts*, 23 Feb. 1877, p. 264.

24. J. Strachey, *India, Its Administration and Progress*, (London 1911), p. 231.

ment of communications since the middle of the eighteenth century, and by the time that the railways were being built, she had, apart from the newly-introduced steamships plying her rivers, a network of turn-pike roads with their attendant stage-coaches and waggons and about 2,600 miles of canals constructed at an outlay of £50,000,000.²⁵ Even in the mid-nineteenth century India, the usual manner of carrying goods for commercial purposes was to load them in slow country boats of very limited tonnage, along rivers which were sometimes open only during a very short period of the year. Again, the only way by which information for administrative purposes could be despatched amongst different parts of the Empire was to send them by the dak or mail runners—a kind of couriers who used to carry despatches on their back from one place to the other.²⁶ There can be little doubt about the efficacy of this system. Depending as it did on the physical capacity of individual runners to traverse vast distance amidst all sorts of weather, its operation was very slow in the first instance, and though the loyalty of these runners to their service remains something proverbial in India even to this day, the dangers attending their journey through wilderness—from climate or wild beasts—rendered the whole system far less dependable. Some extraordinary circumstances might necessitate the journey from one part of the Empire to the other by the senior officials and the usual means of conveyance for such people was the palanquin or a wooden box carried by men. Lord Lawrence is stated to have performed an extra-ordinary feat in his younger days, when, travelling day and night in such a palanquin, he covered the distance between Calcutta and Delhi in a fortnight—a journey accomplished in the railway era in thirty hours.²⁷ Active duty on the front or even peace-time manoeuvres often involved on the part of the army prolonged marching amidst all sorts of weather and this meant, apart from the delay which was obviously very dangerous in an emergency, decreased efficiency of the troops due to fatigue and disease and also high mortality

25. Baxter, 'Railway Extension and its Results', *op. cit.*, p. 30.

26. G. R. Clarke, *The Post Office of India and Its Story* (New York 1921), p. 16.

27. John and Richard Strachey, *Finances and Public Works of India*, (London 1882), p. 2.

amongst them.²⁸ As for the civilian population, richer sections of them could afford to travel in palanquins or carts and for the poorer classes, there was no other way but to travel even long distances on foot.

We may refer here to the specific economic, social and political problems of Northern India, arising out of the poor state of communications there, to which the E.I.R. was projected to be a remedy. The principal economic problem of the area, from this point of view, was the undeveloped state of its commerce, both external and internal. The principal channel of this commerce was the river Ganges. C. E. Trevelyan commented in 1835—"The greatest part of the inland trade of Bengal and Behar, and the whole of the maritime trade of these and of the Western provinces, is concentrated in the channel of the Ganges."²⁹ By 1848, the Grand Trunk Road had been completed up to a great distance from Calcutta towards Delhi excepting of course the bridging work here and there³⁰ and it must have absorbed part of this traffic. But, because of the greater cost involved in the land carriage generally,³¹ the river Ganges must have continued to be the chief trade route of these areas. But, the difficulties of the navigation of the Ganges in those days were many. The newly introduced steam service along that river, being too limited and expensive, was not available for ordinary commercial purposes and native boats, capable of carrying a cargo of 60 tons only and having the maximum speed-limit of six or seven miles per hour,³² were much in use. The chief difficulty in carrying goods along the Ganges route to and from Calcutta lay in the Nadia rivers, namely, the Bhagirathi, the Jalangi and the Matabhanga, the three branches of the Ganges which unite to form the river Hooghly on which

28. Dalhousie's Minute, 20 April 1853, *Parl. Pap.*, (H.C.), 1852-53, LXXVI, (787), p. 118.

29. C. E. Trevelyan, (of the Bengal Civil Service), *A. Report upon the Inland Customs and Town Duties of the Bengal Presidency*, (Calcutta 1835), p. 20.

30. G. W. MacGeorge, *Ways and Works in India*, (London 1894), p. 81.

31. In 1848, J. Bourne stated the cost of land carriage to be 3½d per ton per mile while that of the water carriage according to the same author, was 1.37d on the average in the Gangetic Valley. Ref. J. Bourne, *Railways in India* (London 1848), p. 5.

32. J. Bourne, *Indian River Navigation*, (London 1849), p. 3.

Calcutta is situated. These rivers were open for safe navigation only during the dry, cool months following the rains, i.e., from about November to January, which was practically the main business season of the year.³³ But, even then, the time involved in the journey was very long, 24 days from Calcutta to Allahabad even in steamers,³⁴ and instances of the sudden fall of these rivers, causing immense difficulties to cargo vessels were frequent.³⁵ During the summer months, i.e., roughly from the end of February to May, these rivers were too shallow to allow navigation even by the country boats of any size. Consequently, at this time of the year these had to adopt a circuitous route along the main stream of the Ganges and reach Calcutta via the Sundarbans and the rivers intersecting them. By the latter route, the length of the voyage was increased, according to one contemporary estimate,³⁶ from 787 miles to 1147 miles. During the rains, both the direct route along the Nadia rivers and the circuitous route via the Sundarbans, was over-flooded and dangerous and the journey along them involved great risks.³⁷ The transport of goods along the Ganges, again, either by the direct route or the circuitous route, generally resulted in the high price of these commodities when actually sold in the market.³⁸ It was not so much because of the actual fare paid for the goods as this fare, as shown by the meagre available statistics, was rather lower than that fixed for the railway goods traffic.³⁹ It resulted

33. *Infra*, Chap. V, pp. 130-131.

34. Bourne, *Indian River Navigation*, *op. cit.*, p. 8.

35. *Infra*, Chap. V, pp. 130-131.

36. Bourne, *Indian River Navigation*, *op. cit.*, p. 8.

37. Bourne, *Railways in India*, *op. cit.*, p. 35 ; also, Stephenson's *Report etc.*, *op. cit.*, p. 14.

38. W. W. Kettlewell (Messrs. Leach, Kettlewell & Co.) to Stephenson, 28 August 1844, Stephenson's *Report etc.* *op. cit.*, pp. 22-23.

39. Stephenson states in his Report at p. 15 that the cost of the transport of goods by water between Calcutta and Mirzapore was 47s.6d. per ton. Taking the distance between these two places by the river route as about 573 miles, that being stated to be the distance between them by the railway along the Ganges in the Report to the Secretary of State on Railways in India for 1868-69 at p. 30, (*Parl. Pap.*, H.C., 1862, XL, Pr. No. 3009), the cost of water carriage of goods between them, according to Stephenson's estimate, is about 1d per ton per mile. But, the rate fixed on the E.I.R. for the lowest class of

from the uncertainties in the journey, such as loading and unloading of goods if boats got stuck because of the river bed being too shallow, as was often the case towards the approach of summer, or if they were overtaken by storms, incidents not very uncommon when the business season had just started, following the rains. It also resulted from the need for maintaining expensive warehouses near the banks of these rivers.⁴⁰ Because of the slow operation of the land carriage available, the despatch of goods from places of production to these river banks could not be postponed until the latter were open and actually had to be commenced long before-hand. For the storage of goods all round the year, the warehouses were indispensable. The prolonged voyage meant deterioration of goods when in transit and it meant also that the capital involved had to remain idle for an unnecessarily long period of time.

Obviously, it was hoped that the projected lines of the E.I.R. would provide a remedy for all these evils, and would provide as well, the means by which the commercial potentialities of the area could be effectively developed. The area had been known through ages for the richness of its soil and the variety of its resources. In spite of all the difficulties of the navigation of the Ganges, the goods traffic passing along this river was not negligible. In 1841, this traffic passing through Rajmahal at the head of the Gangetic delta, towards Howrah, was estimated at 592,600 tons per annum, the basis of this calculation being the volume of goods passing through during the summer months only, when, because of the low level of the river which made it difficult to navigate boats of any size through it, this was bound to be at its minimum.⁴¹ In 1853, J. Hodgson, the locomotive superintendent of the E.I. Rly. Co. estimated this traffic to be 1,460,000 tons per annum.⁴² In order to have some idea of specifically the external trade of the areas to be served by the projected E.I.R., we may refer here to the trade statistics of the port of

goods was, as stated in the Report to the Sec. of State on railways in India for 1861-62, p. 23, 1½d per ton per mile.

40. W. W. Kettlewell (Messrs. Leach, Kettlewell and Co.) to Stephenson, 28 August 1844, Stephenson's Report etc. *op. cit.*, p. 23.

41. Report of the Rajmahal Canal Committee, 1841, p. 25, as mentioned in Bourne, *Railways in India*, p. 34.

42. Hodgson's Report, 19 March 1853, Rly. Letts. Encl., Vol. VIII.

Calcutta through which it passed, remembering, of course, that these statistics include also a portion of the external trade of Eastern Bengal and Assam—the portion which had no access to the port of Chittagong due to a lack of conveyance. The value of goods carried through the port of Calcutta during the five years ending in 1849-50 was as following⁴³ :—

Imports

	<i>Merchandise</i>	<i>Treasure</i>
1845-46	Rs. 5,28,17,596	Rs. 1,00,93,701
1846-47	Rs. 5,25,66,218	Rs. 1,21,67,608
1847-48	Rs. 4,47,01,060	Rs. 92,80,607
1848-49	Rs. 4,27,50,181	Rs. 1,43,09,586
1849-50	Rs. 5,31,30,236	Rs. 1,18,40,907

Exports

	<i>Merchandise</i>	<i>Treasure</i>
1845-46	Rs. 1,00,81,294	Rs. 36,74,479
1846-47	Rs. 9,56,25,602	Rs. 22,59,540
1847-48	Rs. 8,33,22,033	Rs. 30,53,860
1848-49	Rs. 9,41,98,591	Rs. 43,46,506
1849-50	Rs. 10,53,99,069	Rs. 39,28,057

The railway operating in the area, was to do away with all the uncertainties of the boat journey and thus, minimise the time and cost involved in the transport of goods. The way, it was hoped, would, thus, be paved for the creation of a healthy trade where the lower prices might lead to increased demand and the enlargement of markets, and these, in their turn, would result in the increased production both in agriculture and industry. Dalhousie was very emphatic about the way the resources of the entire Gangetic Valley—the coal of Bengal, the opium of

43. The figures are taken from the *Commercial Annals* published from Calcutta, compiled for the years 1845-46 to 1847-48 by E. Wilkinson, Export Supervisor, Calcutta Custom House and for 1848-49 and 1849-50 by N. Campbell, Superintendent of Customs. These figures being official values, may not in all cases reflect the true value of goods.

Bihar, the trade of the Narmada Valley, and various produce of the fertile provinces of Oudh and Rohilkhand⁴⁴—could be developed by the projected lines of the E.I.R.⁴⁵

As stated earlier, inter-related with this question of economic advancement, there was the question of social development. Improved economic conditions stimulate social development. Apart from this, the improved transport has a more direct role in the social uplift of a country. The ease and comfort, in addition to lesser expenses, attending the journey in a railway from one place to the other, induce people to make use of it in the various pursuits of their life, such as, education, religion, social callings, and other ordinary business purposes, and the activities in all these respects are stimulated. The effects of the increased social mobility are wholesome specially in the form of the spread of education and in the development of new trends in human thoughts and ideas. In all the preliminary discussions on the course of the lines to be constructed by the E.I. Rly. Co., there was an insistence on taking them through the densely populated areas in the Gangetic Valley.⁴⁶ Apart from the inducement of having a larger traffic which was a vital necessity in respect of these early lines of railways in India as we have referred to,⁴⁷ the consideration of benefitting a greater number of people must have been there. A special consideration was given to the large number of Hindu pilgrims, travelling long distances to the famous pilgrimages of Northern India, such as, Benares, Gaya and Allahabad.⁴⁸ Again, one of the main arguments of the protagonists of the extension of railways in India had been that these rapid and cheap means of transport could be of immense help in the work of famine relief.⁴⁹

44. Rohilkhand is a definite historical tract, corresponding to Bareilly Division plus Rampur State and the Tarai parganas of Naini Tal District. Cf. *Imperial Gazetteer of India, Provincial Series, United Provinces of Agra and Oudh*, Vol. I, pp. 27-29.

45. Dalhousie's Minute, 20 April 1853, *Parl. Pap.* (H.C.), 1852-53, LXXVI, (787), p. 118.

46. *Infra*, pp. 82-84.

47. *Supra*, pp. 60-61.

48. See, for instance, Bourne, *Railways in India*, pp. 21-22.

49. See, for instance, Kennedy's Memorandum, 14 Sept. 1852, *Parl. Pap.*, (H.C.), 1854, XLVIII, (131), p. 3.

The particular political problem of Northern India—both in its administrative and military aspects—in relation to communications was, at this time, the absence of a close contact between Calcutta, the capital and the western-most territories of British India. The history of the expansion of the British in Northern India had been a continuous movement westward from Calcutta, the seat of the British power in India. By the middle of the nineteenth century, when the railway construction was about to start in India, both Sind and the Punjab along the western frontier, had been included within the bounds of the British Empire.⁵⁰ It is not very difficult to imagine how ineffective the system of mail runners could be in the despatch of information for administrative purposes over this vast distance. It is also not very difficult to imagine how precarious was the position from the military point of view specially in the context of the Russo-Afghan threat on the north-western frontier. It is sufficient here to point out that, if, under the existing conditions in respect of communications in the area, the need did ever arise to defend the north-western frontier from the Fort William in Calcutta, the East India Company's chief arsenal in India,⁵¹ six months were to elapse before troops could arrive from that place since they had to march all the distance between these two points.⁵²

The benefits that might accrue in the administrative and military spheres in Northern India from a through line of railway from Calcutta to the north-western frontier—as the lines of the E.I.R. in their ultimate form were projected to be, were immense. Hardinge, the Governor General of India from 1844 to 1848, assessed them as follows—"In a political point of view, the daily delivery of the mails from Delhi to Calcutta in sixty hours instead of eight days,—the electric telegraph communicating important orders in a few minutes from one extremity to the other,—would give the Government great additional powers, approaching almost ubiquity as compared with the system of dak

50. *The Cambridge History of India*, Vol. VI, p. 448.

51. R. Thornton, *A Gazetteer of the Territories Under the Government of the East India Company and of the Native States on the Continent of India*, Vol. I, p. 236.

52. Kennedy's Memorandum, 14 Sept. 1852, *Parl. Pap.*, (H.C.), 1854, XLVIII, (131), p. 4.

runners and dak travelling. The vigour, the confidence, and the economy with which the Government would be carried on would be greatly increased.⁵³ The great importance that Dalhousie attached to the military importance of a thorough line of railway from Calcutta to the Sutlej, we have already referred to.⁵⁴

We now proceed to see how the particular routing of the different portions of the E.I.R. was decided upon and how utmost efforts were made to realise to their maximum limit the objectives which we have outlined above. The first portion of the line to be constructed was, as we have seen,⁵⁵ a short, experimental line within the estimated available capital of £1,000,000. As regards the direction of the line, the contract stated that it was "to commence at Calcutta, or at some place within 10 miles of Calcutta, and to take such a direction that it may form part of a line of railway from Calcutta, either to Mirzapore or to Rajmahal,"⁵⁶ Practically from the earliest days, it had been assumed that the first line to be constructed in this part of India would link up the city of Calcutta with the Burdwan coalfields.⁵⁷ After much deliberations and laborious surveys, it was decided that the experimental line of the E.I.R. was to take this direction.⁵⁸ The line was to start at Howrah on the right or west bank of the river Hooghly, facing Calcutta on the left or eastern bank of that river, and the latter city was to be linked with the former by the establishment of a regular steam ferry service.⁵⁹ Commencing the line at Calcutta involved the necessity of bridging the Hooghly in order to take it to Burdwan. But, bridging the Hooghly either at Calcutta or

53. Hardinge's Minute, 28 July 1846, *Parl. Pap.*, (H.C.), 1847, XLI, (68), p. 23.

54. *Supra*, Chap. II, p. 41.

55. *Ibid.* pp. 25-26.

56. The text of the Contract between the E.I. Co. and the E.I. Rly. Co., 17 August 1849, *Parl. Pap.*, (H.C.), 1849, XIX, (259), p. 4.

57. *Supra*, Chap. I, p. 3.

58. Dalhousie's Minute, 4 July 1850, as mentioned in Kennedy's Report, 29 Jan. 1851, *The Selections from the Records of the Government of India* (abb. Sel. Govt. of India), No. 1, pp. 39-40.

59. Turnbull's Report, encl. to Stephenson to Halliday, 30 May 1850, 29 May 1850, paras 8 & 9, Rly. Letts. Encl., Vol. II

below or above Calcutta meant immense expenses which could not be undertaken in 1849-50—years of financial stringency.⁶⁰ For instance, Palta Ghat near Barrackpore, it was suggested, might be selected as a place for this intended crossing. But, the river here was described to be 710 yards wide, with a depth of water in ordinary floods of no less than 45 feet, the bed of the river being a soft alluvium of unknown depth. The construction of a bridge here would involve heavy costs, roughly estimated at £450,000 while a minimum of three years was needed before its construction could be completed.⁶¹ From Howrah, it was to proceed towards the north, touching Serampore, the French settlement of Chandernagore, Chinsura and Hooghly and at Hooghly, the line would turn towards the north-west and ultimately would extend towards the coal-fields of Raniganj in the Burdwan district via Pandua.⁶²

The commercial importance of this line was undeniable and the absorption of the existing traffic was bound to make the line profitable as it eventually turned out to be the actual case.⁶³ The area lying between Calcutta and Burdwan was one of the richest parts of the Gangetic Valley. In a contemporary gazetteer, the district of Burdwan was described as “one of the most productive parts of India,”⁶⁴ The most important trade carried on between these two places was that in coal—the principal produce of Burdwan. About this time, i.e., the mid-nineteenth century, the principal collieries were opened at Raniganj in that district⁶⁵ and coal was also discovered in the neighbouring areas of Birbhum, Rajmahal, Cuttack, Singbhum, Palamau, Sohagpore and also in areas close to the river Ajay.⁶⁶ A geological report of 1815 describes that at Raniganj the

60. *Supra*, Chap. II, pp. 25-26.

61. Turnbull's Report on the Experimental Line, 29 May 1850, para 6, encl. to Stephenson to Halliday, 30 May 1850, Rly. Letts. Encl., Vol. II.

62. *Ibid.*

63. *Supra*, Chap. II, pp. 52-54.

64. Thornton, *op. cit.*, p. 172.

65. *Report of the Committee for Investigating the Coal and Mineral Resources of India* for the year 1838, Vol. I, p. 19, Section I.

66. *Report of the Committee for Investigating the Coal and Mineral Resources of India* for the year 1841, Vol. I, Introduction p.v.

first bed of coal was to be reached at a depth of 45 feet 3 inches and it was one foot three inches in thickness and of inferior quality. Separated from this first bed of coal by a few more beds of coal and shale, none being important either in respect of quality or quantity, there were two valuable beds of coal, one eight feet and the other nine feet in thickness and the latter was very good coal. The lowest bed of good coal was the seventh one from the surface.⁶⁷ The works of excavations were not carried on properly for all these years and even in 1841 the maximum depth attained was 88 feet.⁶⁸ But, since the 1830's, the utility of these mines as sources of fuel supply for the newly introduced steam vessels on the rivers of India was being increasingly felt⁶⁹ and the supplies to Calcutta were on the increase. The volume of coal transported from the Burdwan collieries to Calcutta by the river Damodar alone—the main line of communication for the coal-trade between Burdwan and Calcutta—was stated in 1844 to amount to 20,00,000 maunds in a favourable season.⁷⁰

The difficulties of transportation, however, restricted this trade and made it a laborious operation. The river Damodar, violent in rains and shallow in summer, was navigable only for a short period during the year. Loaded in hackeries from the pits, coal was brought to the river Damodar and so by water it used to be taken southward to Amta, a main trading station on the Damodar in those days⁷¹—a few miles from Howrah opposite Calcutta. From Amta to Calcutta, it thus involved, apart from the crossing of the river Hooghly, land carriage usually in hackeries on both sides of that river. The time involved was a great hindrance to the development of this

67. *Report of the Committee for Investigating the Coal and Mineral Resources of India* for the year 1838, p. 19, Section I.

68. *Report of the Committee for Investigating the Coal and Mineral Resources of India* for the year 1841, Vol. II, p. 19.

69. *Report of the Committee for Investigating the Coal and Mineral Resources of India* for the year 1838, p. 17, Section I.

70. Replies of Dwarkanath Tagore to enquiries made on the subject, as referred to in Stephenson's letter to Theobald, 3 August 1844, Stephenson's *Report* etc., *op. cit.*, p. 42.

71. Extract of a letter from J. Erskine, 1841, respecting cost of Burdwan coal, *Ibid.*, p. 47.

trade. Since the river was not navigable all round the year, coal dug from time to time had to be stocked on the banks of the absorv this existing traffic and this was doubly important in when added to that taken in the journey in hackeries and boats led in many cases to the loss of two seasons though the direct distance by land between Calcutta and Burdwan was only 75 miles.⁷² The journey along the Damodar—specially during the rains when this river was over-flooded—was precarious and the loss from boat-wrecks used to be enormous—20% of the whole cargo as stated in 1844.⁷³ All these causes, in addition to the cost of transport, led to the high price of this article in Calcutta. While the price of coal at the pit's mouth was about half an anna, in Calcutta it used to be sold at four annas.⁷⁴ The same difficulties attended the transport of coal along the river Ajay—the other river traversing this coal district, which met the Bhagirathi.⁷⁵

Apart from coal, sugar, the important produce of Burdwan and also of the neighbouring district of Bankura, was exported to Calcutta in boats along the river Hooghly. The office of the district collector states the quantities exported during the years 1839-40 and 1840-41 to be 121,963 maunds and 140,000 maunds, respectively.⁷⁶ The main import into the district of Burdwan and the other adjoining districts was salt from the Government salt depots at Salkhia which Stephenson reckoned in one year as 12,962 tons.⁷⁷

A railway accomplishing the journey between Burdwan and

72. Stephenson to Theobald, 3 August 1844, Stephenson's *Report*, etc., *op. cit.*, p. 42.

75. Replies of Dwarakanath Tagore to enquiries made on the subject, as referred to in Stephenson's letter to Theobald, 3 August 1844, *ibid.*

74. Extract of a letter from J. Erskine, the European gentleman possessing coal mine in the near-by Ajay area and residing there too, (date not given), *ibid.*, p. 47.

75. *Report and Abstracts of Proceedings of a Committee for the Investigation of the Coal and Mineral Resources of India Up to May 1841*, p. 19.

76. Extract of a letter from J. Erskine, the European gentleman possessing coal mine in the adjacent Ajay area and residing there too. (date not given), Stephenson's *Report etc.*, *op. cit.*, p. 47.

77. Stephenson's *Report etc.*, *op. cit.*, p. 14.

Calcutta in a few hours, with all its other attendant advantages, lesser cost, ease, comfort and security, was bound to absorb this existing traffic and this was doubly important in making the line remunerative and accelerating activities towards the development of the existing trade. The importance of a steady remuneration was greatest in respect of the line under discussion as it was the first railway line to be built in this part of India. Stephenson himself was confident of the profitability of this line and his view was that, ".....as this portion of the great line would, upon its completion, yield an independent and considerable income, it would be most advisable that to this extent the line,.....should be first completed".⁷⁸

The commercial importance of the line under discussion was thus great and its social benefits also were to be enormous following indirectly through the increasing mobility amongst the people for various purposes. But, the line by itself, stopping as it did at Raniganj, could not be specially important from the administrative and military points of view. The administrative and military problems of Northern India were of much wider and complicated nature. Apart from serving the local administrative and military needs arising from time to time, the line, with the prospect of its ultimate expansion to Delhi might be described as the first step towards providing a solution for those wider problems.

The particular engineering problem which was causing concern to the authorities for this part of the line was due to the fact that it would have to pass through the low-lying areas between the river Hooghly and the lower Damodar, lying to the south of Barsul and Kalna, which during rains used to be annually submerged under water, and far more dangerous than that, was subject to the periodical floods of the river Damodar. The greater part of the area mentioned was about 16 feet below the level of the eastern bank of the Damodar and the western bank of the Hooghly.⁷⁹ So, when these rivers were filled up, the area was always under a few feet of water and

78. Stephenson's *Report etc.*, *op. cit.*, p. 10.

79. Lt. Col. Forbes, Engr. in charge of the Ganges Canal Works, to Captain Greene, Military Board, 25 June 1845, Beng. Rly. Cons., 3 Sept. 1845, No. 2, Range 163, Vol. XV.

was transversible only in boats.⁸⁰ A more dangerous situation arose when there was a sudden rise in the river Damodar which was a frequent phenomenon during the rains and this led to breaches in the embankments⁸¹ along this river and the entire country became thus flooded and dangerous. No permanent solution to these problems of drainage and flooding was found even in the mid-nineteenth century and these remained almost annual occurrences causing immense hardship to the inhabitants of the adjoining areas and in the case of the Damodar flood specially, it meant a permanent strain on the Government treasury which had to spend a large amount of money every year for the temporary repairs of the embankments and also for making compensations to the flood victims. According to the returns from the Superintending Engineer of the South Eastern Provinces, 10,040 breaches occurred in the Damodar embankments in his circle alone in one year, namely, the year 1845-46.⁸² In the circle of that officer alone, the repairs of the Damodar embankments cost, in ten years from 1835-36 to 1844-45, 19,73,558 rupees, besides the remissions paid to zamindars in the same period, amounting to 19,77,891 rupees.⁸³ The railway line passing through this area was thus liable to serious damage resulting in immense repairing expenses and difficulties to the prospective traffic.

The most straight-forward solution to this problem was to take the line along the left or eastern bank of the Hooghly

80. Lt. Col. Forbes, Engr. in charge of the Ganges Canal Works, to Captain Greene, Military Board, 25 June 1845, Beng. Rly. Cons., 3 Sept. 1845, No. 2, Range 163, Vol. XV.

81. Embankments or bunds as they were called in the local language were maintained since a very early period to prevent the Damodar from being too injurious to the life and property in the neighbouring areas. In the earlier period, they were under the management of the Raja of Burdwan. With the erection of the Military Board during the E.I. Company's regime, they were put under the charge of a group of engineers and according to one estimate more than 308 miles of embankments were kept in repair. Ref. Observations by W. Wray, Engr. in the Service of the E.I. Rly. Co., 18 Jan. 1849, Rly. Home Cons., 'A', Vol. I.

82. As referred to in Kennedy's Report, 21 Jan. 1851, *Sel. Govt. of India*, No. 1, p. 37.

83. *Ibid.*

and cross that river at a place where the effects of these floods would be at a minimum. Prior to 1849, there were several suggestions as to the route that the line in such a case was to take. One was that starting from Calcutta, the line would stretch along the eastern bank of the Hooghly past Barrackpore and cross the Hooghly a little below Chandernagore. Then leaving Chinsura and Hooghly on the right, it would cross the Grand Trunk Road near Makhanpore and from thence, it would extend nearly in a straight line to Burdwan.⁸⁴ The other route suggested was that it would leave Calcutta at its northern extremity and take a direct line northwards to Barrackpore. From Barrackpore, the line would stretch along the river Hooghly nearly in a straight course to Goonpalla and further northward to Ranaghat and near the latter place, it would cross the river Matabhanga. Moving further northward, and turning gradually towards the north-west, the line was to cross the Hooghly at a short distance below where it was first formed and took that name by the junction of the Bhagirathi and the Jalangi. After crossing the Hooghly, it would be carried nearly in a straight course past Balkishun, about ten miles northward of Burdwan.⁸⁵ The third route suggested was a little diversion from the above with the object of avoiding the crossing of the Matabhanga.⁸⁶

But, the reason which lay at the root of starting the line in 1849-50 from Howrah rather than from Calcutta explains also why none of these routes was then practicable. Each of these involved the crossing of the Hooghly and the second route as described above required the crossing of the Matabhanga as well and the immense cost of bridging could not be provided out of the limited capital available. The adoption of the eastern or the left bank of the Hooghly was ruled out by the financial stringency of the period as we have just referred to. Extending along the western or the right bank of the Hooghly, the experimental line of the E.I.R. remained exposed to both the ordinary drainage of the area and the floods of the Damodar and specially the latter problem proved particularly trouble-

84. Report of the Railway Commission, 13 March 1846, para 9, Beng. Rly. Cons., 25 March 1846, Range 163, Vol. XV.

85. *Ibid.*, paras 14-17.

86. *Ibid.*, para. 22.

some to the engineers in charge of the railway works as we shall see later on.⁸⁷

The route for the further extension of the experimental line towards the N.W. Provinces had been a subject of great controversy ever since the negotiations for this railway had started. This controversy was mainly regarding that portion of the line which lay between the experimental line and the city of Mirzapore on the Ganges. Originally, the idea was to extend the experimental line from Raniganj in a direct course through the western-most range of hills in Bengal to the plains of Bihar ; then again in a direct course by Sherghati and Nourangabad to the river Son ; then along the foot of the near-by hills to the town of Sasaram ; then for about 74 miles in the north-western direction to the town and fortress of Chunar and then to Mirzapore—a distance of eighteen miles in the same direction.⁸⁸ But, the route that was ultimately decided upon was the one along the Ganges from Khana near Burdwan on the experimental line to Rajmahal on the Ganges, and from Rajmahal, through Bhagalpore, Monghyr, Patna and Chunar, to Mirzapore.⁸⁹ The latter line being circuitous, was, according to one contemporary estimate, about 70 miles longer than the direct one.⁹⁰

Under the circumstances, the river line was the most natural selection and it was a wise selection too, as it was better calculated to serve all the objects in view. The direct line being short and direct, was most important from administrative and military points of view. But, it should be pointed out here that the political and military advantages were not hampered to any considerable extent on the Ganges line. As it was stated by Baker,⁹¹ for military objects the most direct route was the best, no doubt. But, still, the degree of advantage was to be judged

87. *Infra*, Chap. V, pp. 114-115.

88. Report of the Railway Commission, 13 March 1846, paras 27-34, Beng. Rly. Cons., 25 March 1846, No. 6, Range 163, Vol. XV.

89. Fin. (Rly.) Des. to, 17 August 1853, No. 8, Rly. Des. Beng. Ind., Vol. I, p. 319.

90. Report by the Congs Engr. (Baker) to Govt. (Rly. Dept.), on the result of his examination of certain lines for the extension of railways in the Bengal Presidency, dated 15 March 1853, *Parl. Pap.*, (H.C.), 1852-53, LXXVI, (787) p. 6.

91. *Ibid.*

by the time lost in deviation. According to him, a detour of 70 miles to troops marching twelve miles a day might not be justifiable ; but where that distance was covered in four hours, that objection would disappear. Besides, many military stations, such Buxar, Dinapore, Chunar and Benares, were directly served by the river line while they were not accessible to the direct line. The detour involved in the River line, if not injurious to the military interests, was not so to administrative objects either since in the latter case, the sense of urgency was obviously lesser.

From the view-point of the economic development of the country and also from that of the financial success of the undertaking, the direct line was definitely in a far less advantageous position than the River line. The comparative importance of these two lines in the contemporary economic development of the country may be judged with reference to the entire pattern of economic life in India in those days. The nature of the Indian economy had been in those days and even later, basically agricultural, supported by mercantile activities. The river Ganges with the fertile agricultural regions on both sides had been through years the main factor in the development of that economy in Northern India. We already have some idea about the amount of traffic that passed along the Ganges. The railway line extending along the Ganges was bound to be a stimulant to the economic development of the country as understood in that period.⁹² Whereas above Raniganj, the direct line was to traverse a region which, apart from coal and other minerals, had hardly any other important produce. In 1846, Maddock wrote with reference to this line—"Between Calcutta and Mirzapore there could be no useful division in the line without

92. The possibility of the line being subject to competition from the Ganges, as it ran parallel to that river, was pointed out in some quarters. In practice, however, it was found that in years of commercial prosperity when people were in a hurry to transport their goods, the hazards and uncertainties of the river journey precluded the chances of such competition. But, when markets were dull, the slower but less expensive river route was adhered to to a greater extent as was the position in 1871-72. Cf. Report to the Sec. of State for India in Council on Rlys. in India for 1871-72, *Parl. Pap.*, (H.C.), 1872, XLIV, (C. 643), p. 19.

branches from the main line to connect it with Patna or Benares, for the main line would pass through between 400 and 500 miles of country, for the most part thinly inhabited, and containing not one capital town or emporium of trade."⁹³ Kennedy wrote in 1851—"Between Raneegunge and Mirzapore, a distance of 320 miles of the hilly line, neither goods nor passengers converge, nor can the smallest portion of revenue reasonably be expected from that district ;"⁹⁴ Noad who was otherwise a supporter of the direct line, admitted that the nature of the country in the direct line was more hilly and wild and devoid of dense population.⁹⁵ Specially the table land extending northward, from the head of the Damodar to that of the valley of the Barakar river, having hard gneiss as its foundation, was agriculturally very deficient. About 25% of the total area was mountain land while another 25% might be considered either under cultivation or pasture land and the rest was waste land. Agriculture was possible only where irrigation was practicable.⁹⁶ The area was minnerally rich and capable of being industrially developed if facilities of transport, labour and so on, were available. Importance of that was being increasingly felt, no doubt, but, still, not to the extent as to lead to the adoption of this line in preference to that by the Ganges. Besides, by the adoption of the Ganges route, the hill area was not neglected entirely. By the branch to Rani-ganj which was capable of further extensions, the entire area might be made accessible to the Ganges line as was actually done later on.⁹⁷ It might be argued here that the adoption of the direct line would not necessarily have meant the sacrifice of the trade along the Ganges. This might be drawn to it by means of branches to the important commercial centres as was

93. Maddock's Minute, 1 May 1846, *Parl. Pap.*, (H.C.), 1847, XLI, (68), p. 17.

94. Kennedy's Report, 29 Jan. 1851, *Sel. Govt. of India*, No. 1, p. 42.

95. Minutes of Evidence taken before the Sel. Com. on East India (Rlys.), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 41. Q. 606.

96. *Report of the Geological Survey of India for the season 1848-49*, p. 6.

97. *Infra*, Chap. V, p. 138.

actually suggested by Simms in 1845.⁹⁸ The flaw in this argument was pointed out by Kennedy. He showed that about 200 miles of hill districts—the western-most hills stretching from the Bengal frontier—were to be accommodated by one or other part of the main or the branch lines. This meant moving separate arrangements of trains on these different altitudes which involved the greater use of engine power and the increased working cost.⁹⁹ All these would have rendered it impossible to carry goods furnished by the productive places on the Ganges at low freights. Higher freights would probably have meant less traffic.

These difficulties make it abundantly clear that the financial success of the direct line was much more problematical than that of the Ganges line. The commercial traffic expected to emerge on the direct line was poor while the cost of construction and working was higher. Practically, these were the main grounds on which the direct line was rejected.¹⁰⁰ The hill districts mentioned above were then shown by the available section of the area to have a summit of 1,380 feet above Calcutta and 1,040 feet above Mirzapore, with an aggregate rise towards Mirzapore of 2,044 feet and an aggregate fall in the same direction of 1,804 feet.¹⁰¹ The Report of the Geological Survey of India for the Season 1848-49 states the height of the Hazaribagh area to be traversed by the direct line to be 1585 feet above the sea level.¹⁰² The available topographical data as regards this area confirmed the fact that the best gradient that could be secured was 1 in 100 and that, again, with heavy cuttings and embankments.¹⁰³ These heavy cuttings and embank-

98. Simms' Memorandum, 12 Sept. 1845, Beng. Rly. Cons., 17 Sept. 1845, No. 4, Range 163, Vol. XV.

99. Minutes of Evidence taken before the Sel. Com. on East India (Rlys.), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 136, Q. 2020.

100. Kennedy's Report, 29 Jan. 1851, *Sel. Govt. of India*, No. 1, pp. 41-45. It was on the basis of this report that decision was taken in favour of the Ganges line. Ref. Minutes of Evidence taken before the Sel. Com. on East India (Rlys.), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 34, Q. 470.

101. Kennedy's Report, 29 Jan. 1851, *Sel. Govt. of India*, No. 1, p. 41.

102. *Report of the Geological Survey of India for the season 1848-49*, p. ii.

103. Turnbull's Report, 26 Feb. 1851, *Sel. Govt. of India*, p. 75.

ments meant higher cost of construction while to run the trains over these gradients meant the greater use of the locomotive power resulting in high cost as we have already mentioned. One remedy to the latter problem might have been tunnelling but the amount of cuttings that it would have involved rendered the proposal unthinkable.¹⁰⁴ In respect of gradient, the line along the Ganges was most desirable. The whole difference of level between Calcutta and Mirzapur was stated to be only 240 feet and this rise was almost uniformly spread over a distance of nearly 600 miles and consequently gradient available on this line averaged about 1 in 12,000.¹⁰⁵ In 1851, Turnbull went to the extent of stating ".....although it would be almost premature and rash to state so positively before regular sets of longitudinal sections are made, yet I have strong hopes, amounting almost to conviction, that a gradient not much, if at all, greater than 1 in 2000 may be obtained all the way from Howrah via Rajmahal to the river soane on the west of the city of Patna,....."¹⁰⁶ From the Son to Allahabad, the country was described as being of the same character as that further down the river, i.e., rising uniformly about six inches in a mile.¹⁰⁷

The Ganges line, though very desirable from the point of view of gradient, was not free from engineering difficulties. The large number of bridges and viaducts on the numerous rivers on this line, apart from adding to the total cost of construction,¹⁰⁸ were bound to present great engineering problems. But this particular difficulty was not any less on the direct line either. It had to cross practically the same rivers as the Ganges line, the only difference being that the former was to cross them far into the interior where the waterways were narrower.¹⁰⁹ Moreover, the crossing of the river Son which was common to both the lines would have been much more difficult on the direct line. On the direct line, this river was 2½ miles in width in the rainy season while on the Ganges line it was, during the

104. Turnbull's Report, 26 Feb. 1851, *Sel. Govt. of India*, No. 1, p. 75.

105. Kennedy's Report, 29 Jan. 1851, *ibid.*, p. 41.

106. Turnbull's Report, 26 Feb. 1851, *Sel. Govt. of India*, No. 1, p. 76.

107. *Ibid.*

108. *Supra*, Chap. II, p. 36.

109. Simms' Memorandum, 12 Sept. 1845, *Beng. Ry. Cons.*, 17 Sept. 1845, Range 163, Vol. XV.

same season, $\frac{1}{4}$ of a mile wide.¹¹⁰ In the contemporary mind there was virtually no doubt as to the superiority of the Ganges line as a paying line. Kennedy wrote—"There are probably more goods for transport, converging to the various points of the Ganges line between Mirzapore and Calcutta, than on any other line of equal length in India, all of which must swell the revenues of a judiciously-managed railway, . . ."¹¹¹ Turnbull was of opinion that " . . . its [The Ganges line] advantages over the other as a 'paying line' of railway are to me so apparent after seeing both routes, that I would have recommended the adoption of the Ganges line, even although the other had been on a dead level all the way from Calcutta to the river Soane."¹¹² Dalhousie was the most weighty protagonist of the line by the Ganges which in his opinion was to fulfil all the objects in view and this he expressed in the following language—"Tried by these tests, I apprehend that the entire line from Calcutta by the Valley of the Ganges to the North West Provinces, . . . will stand the first in order of importance and value, and ought to command the earliest and best attention of the Government of India."¹¹³

The propriety of the decision in favour of the Ganges line during this period might be established with reference to future experiences. Far beyond our period, about the end of the nineteenth century, decision was taken for the construction of the Grand Chord line which was to traverse more or less the same route as the direct line discussed earlier, the main object in view being that it would form a relief to the growing traffic of the main line.¹¹⁴ The line ran from the Barakar branch of the main line to Mughal Sarai via Gaya.¹¹⁵ The actual construction of this line did not change to a very great extent the ideas held about its feasibility in the fifties. Huddleston, writ-

110. Minutes of Evidence taken before the Sel. Com. on East India (Rlys.), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 133, Q. 1988.

111. Kennedy's Report, 29 Jan. 1851, *Sel. Govt. of India*, No. 1, p. 41.

112. Turnbull's Report, 26 Feb. 1851, *Sel. Govt. of India*, No. 1, p. 81.

113. Dalhousie's Minute, 20 April 1853, *Parl. Pap.*, (H.C.), 1852-53, LXXVI, (787), p. 117.

114. G. Huddleston, *History of the East Indian Railway*, (Calcutta 1906), p. 141.

115. *Ibid.*, p. 143.

ing in the early part of the present century, when the portion of the line between Gaya and Mughal Sarai had already been completed and opened for traffic, was not very optimistic about the traffic converging on the line. All hopes were still banked on the probable coal traffic since in his language, "..... judging by the nature of the country traversed by a considerable portion of the new line, it is doubtful whether its local traffic will prove more than nominal....."¹¹⁶ He also referred to the "very heavy work through a hilly country" in that portion of the line that lay between Gaya and the Barakar branch.¹¹⁷ Obviously, the risk of the construction of such a line could be taken in the nineties when the financial success of the entire undertaking was proved beyond all doubt.¹¹⁸ The line during this later period was to act as a feeder line and also as a complement to the great railway system of the Gangetic Valley. The question of profitability, naturally ruled out the selection of this line as the original main line of the E.I.R.

Beyond Mirzapur, there was not much scope for any difference of opinion as to the route of the line. The object was to take the line to Delhi and this could be conveniently done by taking the line along the Ganges to Allahabad where it was to cross the Jumna and then through Fatehpur, Cawnpore, Etawah, Shikohabad, Tundla, Aligarh and Ghaziabad, to Delhi.¹¹⁹ In fact, this portion of the line was common to both the river and the direct line. The cities it accommodated were notable from various points of view, administrative, military and economic.

Amongst the other extensions of the E.I.R., the Jubbulpore line and the Chord line were the only important ones. The former was to run from Allahabad on the main line to Jubbulpore where it was to meet the Great Indian Peninsular Railway. It sought to facilitate the through traffic between the northern and the southern parts of India.¹²⁰ Like the Grand

116. Huddleston, *op. cit.*, p. 144.

117. *Ibid.*, p. 143.

118. *Supra*, Chap. II, pp. 54-55.

119. The route in its bare outline is described in Rep. to the Sec. of State for India in Council on Rlys. in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (2669), p. 8.

120. Report to the Sec. of State for India in Council on Rlys. in India for 1869-70, *Parl. Pap.*, (H.C.), 1870, LIII, (C. 163), p. 3.

Chord line, the Chord line might be described as another supplement to the great railway system of the Gangetic Valley. The increasing need for coal to be used as fuel in the rapidly extending railways in India led to the need for opening the existing coalfields in the country. A line of railway from Sitarampur, to which place a minor extension of the railway line from Raniganj had already been made, to Luckeesarai, with a branch to Karharbari coalfield, was decided on under the circumstances. This line was thought to be useful in opening the above-mentioned colliery the existence of which had come to be known in 1848-49¹²¹ and also in carrying the Bengal coal generally to the Upper Provinces. This was expressed in the following language in 1867,—“There can be no doubt that the working of these coal-fields [the Karharbari coal-fields] is not only politic but necessary. Of late years the demand for coal has been steadily increasing and its cost has arisen very greatly.

A few years hence, when the railways now in progress have been completed, the traffic on them will be cramped for want of fuel unless the present supply is largely increased. Even the East Indian Railway Company which alone can work the Curhurballee [i.e. Karharbari] collieries on an adequate scale will need the aid of the Bengal Coal Company and other proprietors of the mines.¹²²

Thus, the E.I.R. were projected with the object of stimulating the economic and social life of Northern India and generally to facilitate the political unification of the country. At the same time, when the particular routes of this railway were decided on, there was, over and above the attempt to realise these objects, an insistence on making the lines remunerative. As regards the commercial profitability, the line proved to be of great value, as we have seen. The effects that this railway had in the contemporary economic life in the Northern India are of great importance to students of the economic history of India. This we intend to explore in our final chapter.

121. Report of the Geological Survey of India for the season 1848-49, p. 3.

122. Asst. Sec. to Govt. of Bengal, P.W. Dept., to Sec. to Govt. of India, P.W. Dept., 15 April 1867, Rly. Letts. Encl., Vol. XXVII.

CHAPTER IV

PROVISION OF LAND, ORGANISATION AND PERSONNEL OF THE E.I. RLY. CO.

In the present chapter, we would discuss two different questions relating to the E.I.R., namely, the provision of land for this railway in the first place, and secondly, the organisation of this Railway Company both in England and in India, with some observations on its engineering and other staff in India and also on the labour it employed. The chapter is, accordingly, divided into two sections. The work of construction of the line required the provision of three things, land, labour and materials. The provision of materials remained the most serious difficulty all through the period that the work of construction was going on. We propose to narrate in the next chapter the story of the construction of the line with particular reference to this problem. Land and labour questions, comparatively lesser difficulties as experienced in the construction of this railway line, are being dealt with here rather briefly.

SECTION I

Provision of Land

When private companies first began to submit proposals for railway construction in India, one of the points much deliberated upon was the nature of the aid to be expected from the Government. It was felt that so large an undertaking as the construction of a railway, under such unfamiliar physical and social circumstances as in India, could hardly be accomplished without some Government aid. Since the railways would serve as important military and administrative instruments in the hands of the Government, it seemed quite appropriate that aid should be given by the Government. The question was what form it should take.

The E.I. Rly. Co. asked for two things : a grant of dividends upon the capital invested and the provision by the Government of the land required for the proposed railway

line.¹ Opinion was divided as has been seen,² over the propriety of guaranteeing a dividend. There were doubts about the ultimate commercial success of the undertaking and the Government was initially unwilling to take the risk of a heavy loss. But, there was hardly any opposition from the authorities to the proposal that the Government should make a free grant of the land required by the Railway Company. When Simms was asked, early in 1846, to suggest appropriate terms and conditions upon which contracts should be made with the railway companies, the provision of free land was his first point. "The Government", he recommended, [was] "to find all land for the railway and stations, and deliver it free of cost to the railway companies except as to the use of land required by such companies for temporary purposes."³ This recommendation Hardinge, the Governor General, readily concurred with,⁴ as did Maddock,⁵ C. H. Cameron,⁶ and F. Millet,⁷ the members of his Council.

For various reasons, Government assistance in the form of the free grant of land was considered to be a prudent and convenient proposition from the points of view of both the parties involved, viz., the Government and the Railway Companies, and also in the general interests of the undertakings. To provide land free of charge to the railway companies, was not going to be a great financial burden upon the Government. Land was cheap in India—a fact much emphasised in discussions favouring the feasibility of railway schemes in India.⁸ As Stephenson had pointed out in 1841, even in the more fertile areas of Bengal, twenty rupees per bigah was all that was ex-

1. Larpent and Stephenson to Melvill, 30 Dec. 1844, Rly. Home Corrs., 'A', Vol. I.

2. *Supra*, Chap. II, p. 27.

3. Simms to Halliday, 6 Feb. 1846, Rly. Letts. Encl., Vol. I.

4. Hardinge's Minute, 1 May 1846, *Parl. Pap.*, (H.C.), 1847, XLI, (68), p. 13.

5. Maddock's Minute, 1 May 1846, *Parl. Pap.*, (H.C.), 1847, XLI, (68), p. 13.

6. Cameron's Minute, 1 May 1846, *ibid*, p. 21.

7. Millet's Minute, 1 May 1846, *ibid*, p. 19.

8. See, for instance, Report of the Railway Commission, 13 March 1846, para 2, Beng. Rly. Cons., 25 March 1846, No. 6, Range 163, Vol. XV.

pected to be paid for land near Calcutta for some projected canals, while elsewhere rent varied from half a rupee to two rupees per bigah of ordinary land. The hilly tracts through which the line passed from Calcutta to Benares were worth little or nothing.⁹ Moreover, if the Railway Company proved unable to complete a line, land acquired for it by the Government could readily be resold either to its original owners or new purchasers, and meanwhile would yield its usual rent.¹⁰ Furthermore, the purchase of land would be a simpler affair if made by the Government rather than by a railway company. The Government could proceed by regulation, thus avoiding all disputes and complications, and the credit of the Government would serve as security to those selling their lands.¹¹ By the middle of 1846, therefore, the Government of India had decided to make the provision of land a free contribution to the Railway Company.¹²

In discussing the provision of land for the E.I.R. by the Government, it is necessary to consider three points. First of all, we would refer to the measures generally taken by the Government to hand over land promptly to the Railway Company so as to keep pace with the progress of the construction work on the railway. The second point is whether the actual property-holders, who were affected by this acquisition, were duly compensated for the loss of their property and what their attitude to such acquisition was. Lastly, we would try to indicate the extent of the actual financial burden on the Government in providing land for the E.I.R.

The importance of the first question, i.e., the quick delivery of land to the Railway Company is obvious. As long as the Railway Company was not in possession of land, the work of construction could not be started and this meant that a great mass of materials and machinery and also a large number of men would be brought to a stand-still for an indefinite period

9. Extract from notes taken by Stephenson in 1841, Stephenson's Report etc., *op. cit.*, p. 47.

10. Maddock's Minute, 1 May 1846, *Parl. Pap.*, (H.C.), 1847, XLI, (68), p. 13.

11. *Ibid.*

12. Govt. of India to Court, 9 May 1846, (Legis. Dept. No. 1), *Parl. Pap.*, (H.C.), 1847, XLI, (68), p. 2.

of time. The financial loss in such an eventuality can easily be imagined.

The promptitude with which the Government made available to the Railway Company land required by the latter, is really creditable. The first thing that they thought necessary was the modification of the existing law, namely, the Regulation I of 1824, relating to the acquisition of land for public purposes in the Bengal Presidency. Railway construction in India had not been contemplated when this regulation was passed, and the requirement of the prior valuation of the property under this regulation,¹³ before it could be taken in possession, it was pointed out, would produce delay greatly injurious in case of a railway. The complexity of Indian interests in land was bound to make this valuation a long and laborious process.¹⁴ This possibility was apparent in the case of the E.I.R. which passed, for its most part, through densely populated areas.¹⁵ Dalhousie, arguing with his Council,¹⁶ therefore, strengthened the provisions of the 1824 Regulation, by passing Act XLII of 1850 "for giving additional facilities to public works in Bengal", on 20 December 1850. By this Act, any railway built in the Bengal Presidency under the sanction of the Government was declared to be a public work within the meaning of the Regulation I of 1824¹⁷ and it was provided that when land had been certified as being required for a public work, it might be immediately taken possession of by the Government. The amount and distribution of compensation, if not agreed to by private bargain, would hereafter be settled according to Regulation I of 1824.¹⁸

The further question of the superintendence of land pur-

13. Regulation I of 1824. Sec. VII, clause 4, R. Clarke, *The Regulations of the Government of Fort William in Bengal in force at the end of 1853*, (London, 1854), Vol. II, p. 682.

14. Halliday, Sec. to Govt. of India, to Sir H. M. Elliot, Sec. to Govt. of India with Govr. Gen., 23 May 1850, para 4, Rly. Letts. Encl., Vol. II.

15. *Supra*, Chap. III.

16. Dalhousie's Minute, 4 July 1850, para 36, Rly. Letts. Encl., Vol. II.

17. Act XLII of 1850, Sec. I, Clarke, *op. cit.*, Vol. III, p. 364.

18. *Ibid.*

chases under the two acts had meanwhile been settled. The Regulation I of 1824 had provided that when any extensive public work was commenced under the orders of the Government, certain of its powers might be delegated to "any Board, Committee or the like".¹⁹ That body should hereupon determine on all objections to the disposal of individual properties and should issue the requisite orders for arbitration when necessary, without reference to the Government.²⁰ It was proposed that a single officer of proved competence, should be appointed, this being covered by the words "or the like" in the Regulation.²¹ In September, this was agreed to and C. H. Lushington was chosen the first commissioner²² to superintend the "taking, valuing and making over" the land to the railway officials.²³ To assist him in his duties, three amins²⁴ and three deputy collectors were appointed.²⁵ Later on the number of deputy collectors was raised to five.²⁶

Once the law of 1850 was passed, the necessary amount of land was acquired rapidly. All that was required prior to the handing over of the land to the Railway Company was to define the claims therein. The procedure was that after the line of the railway had been selected, the Railway Company became responsible for setting out and clearing the centre line, i.e., laying the actual path of the tracks. The railway surveyors hereupon marked the boundaries of the lands to be taken for permanent or temporary occupation, in accordance with Section II of Regulation I of 1824. Then, in accordance with the

19. The Regulation I of 1824, Sec. III, clause 2, Clarke, *op. cit.* p. 677.

20. *Ibid.*

21. Halliday's Note, 20 May 1850, Rly. Letts. Encl., Vol. II.

22. I. P. Grant, Sec. to Govt. of Bengal, to Lushington, 12 Sept. 1850, Beng. Rly. Cons., 16 Oct. 1850, No. 4, Range 163, Vol. XV.

23. Extract from the proceedings of the Presdt. of the Council of India in Council in the Fin. Dept., 6 Sept. 1850, Beng. Rly. Cons., 16 Oct. 1850, No. 4, Range 163, Vol. XV.

24. Halliday to Grant, 29 Nov. 1850, Beng. Rly. Cons., 26 Dec. 1850, No. 20, Range 163, Vol. XV.

25. W. Setonkarr, Und. Sec. to Govt. of Bengal, to Lushington, 14 Dec. 1850, Beng. Rly. Cons., 26 Dec. 1850, No. 33, Range 163, Vol. XV.

26. Setonkarr to Lushington, 14 May 1851, Rly. Letts. Encl., Vol. IV.

same section, the deputy collectors issued notices setting out details of the land and other property proposed to be taken and the purpose for which it was required. The same notice called upon the people, having a right or interest in the land or property so specified, to present their claims with the necessary details within a specific date. Meantime, the amins prepared a separate khasra or account which showed all details regarding the claimants and the property claimed. The final definition of claims was made on the basis of the reconciliation of these two sets of accounts—one made from the statements of the parties and the other prepared by the amins. When the period allowed in the notices for preferment of claims had expired, and all claims had been defined and classified, the land was handed over to the Railway Company.²⁷

The first 'inch' of ground was made over to the Railway Company on 25 January 1851.²⁸ Operations relating to taking possession of land were carried on speedily. The *Friend of India* wrote early in February,—“We are also happy to add that the operation on the line in our neighbourhood, have been quickened. Mr. Lushington had made over three entire miles of the line to the Railway establishment, and though the present season has been lost, it is gratifying to find that the obstacles to progress presented by ‘the passive resistance of circumstances’, so constantly felt in the East, are steadily disappearing, and that the contractors are now enabled to carry on their labors [Sic.] with alacrity and zest. We have no longer any doubt that the rail will be carried on from Calcutta to Delhi, if not to Lahore, without any interruption. The abundance of unemployed capital at home at the present time, and the cheapness of iron, will naturally suggest the propriety of extending the capital and the operations of the Company.”²⁹ Actually, by April 1852, i.e., roughly within thirteen months since the first land transfer was made, all the lands indented for by the Railway Company in the first section of the line from

27. Report by C. H. Lushington, Rly. Commsr. of his proceedings in taking the land and other property required for Railways, 18 Sept. 1851, *Selections from the records of the Government of Bengal* (abb. Sel. Govt. of Bengal), No. 4, p. 11.

28. *The Friend of India*, 6 Feb. 1851, p. 81.

29. *The Friend of India*, 13 Feb. 1851, p. 97.

Howrah to Pandua was made over to them, with the exception of some isolated patches here and there.³⁰ By the end of 1855, the Railway Company was given the possession of the greater portion of the land required for the Bengal division of the line.³¹ In the upper portion of the line also, operations were carried on with similar promptitude. By March 1855, all the preliminary steps for the provision of the land required by the Railway Company over the long stretch of line from Allahabad to Delhi was thus complete.³² Practically, throughout the length of the lines, the acquisition of land had never caused any delay in the work of construction.

Notwithstanding the fact that the Act of 1850 simplified the proceedings prior to the handing over of the land by permitting its later valuation, a great amount of work was still to be done before such transfers and herein lies the credit of the Government authorities in accomplishing the job so rapidly. The quantity of land taken in the first section of the line from Howrah to Pandua was about 43 bighas per mile, on the average, or fourteen acres for permanent occupation, and about 78 bighas or 25 acres for temporary occupation.³³ Taking this to be the average quantity of land taken per mile all over the line, we may have a fair idea of the total quantity so taken for a railway stretching over more than 1000 miles. The claims over this vast expanse of land, again, were numerous, covering not only the land itself, but also trees, huts, bamboos, etc., thereon. It was often the case that for a single item of property, such as a hut or a tree, there were more than one claimant and in the absence of a record of rights, it was extremely difficult to prove the validity of the different claims submitted.³⁴ Thus, in the first section of the line from Howrah to Pandua, 40 miles only, the number of claims preferred were 4,475. Of

30. The note enclosed to Lushington to Grant, 14 April 1852, Beng. Rly. Cons., 29 April 1852, No. 26, Range 163, Vol. XVII.

31. Fin. (Rly.) Des. to, 16 July 1856, No. 21, Rly. Des. Beng. Ind., Vol. II, p. 251.

32. Fin. (Rly.) Des. to, 20 March 1855, No. 6, Rly. Des. Beng. Ind., Vol. II, p. 72.

33. Report by C. H. Lushington, Rly. Commsr. of his proceedings in taking the land and other property required for the Railways, 18 Sept. 1851, *Sel. Govt. of Bengal*, No. 4, p. 7. Note in margin.

34. *Ibid*, pp. 7-9.

these 1,858 claims were for property taken permanently, comprising about 1,633 bighas of land, 12,266 trees, 20,554 bamboos, 1,311 huts and 64 brick-built houses, 4 ghats and 63 walls; while 2,617 cases were for property for temporary occupation, comprising about 2,790 bighas of land, 21,656 trees, 32,766 bamboos, 1,231 huts, 33 brick-built houses and 74 walls.³⁵ The definition of claims out of numerous counter-claims for property of so vast and varied character was obviously not a simple affair.

Next, we pass on to the discussion of the second question, i.e., to what extent the interests and the sentiments of the property-holders affected by these land acquisition operations were taken into account. The Government seems to be fully conscious of the kind of treatment to be meted out to these people. As regards the question of monetary compensation specially, the Court of Directors wrote to the Government of India in 1856—".....you will not be satisfied without having fully ascertained that those who have necessarily suffered in their rights, for public purposes, have been not only fairly dealt with, but that in every case the decision has been suitable, and even liberal."³⁶ Dalhousie wrote—"No man should be compelled to surrender his land for these purposes, unless the public interest should really demand it;"³⁷

It was decided to pay in compensation the actual market value of the property taken so far as it was determinable and this also was in tune with the general policy of the Government of safeguarding, as far as possible, the interests of the property-holders. The Court initially expressed a vague hope that the consideration of the benefits to be derived from the railway passing through their neighbourhood might induce these property-holders to offer quite moderate terms to the Govern-

35. Report by C. H. Lushington, Rly. Commr. of his proceedings in taking the land and other property required for the Railways, 18 Sept. 1851, Sel. Govt. of Bengal, No. 4, p. 23.

36. Fin. (Rly.) Des. to, 20 August 1856, No. 24, Rly. Des. Beng. Ind., Vol. II, p. 285.

37. Dalhousie's Minute, 4 July 1850, para 45, Rly. Letts. Encl., Vol. II.

ment.³⁸ But, this did not prove to be the case. In this connection, the following statement from Lushington is of interest—"But it seemed very questionable, on a review of the peculiar circumstances of the cases before us, whether this plea [i.e. moderate terms in consideration of advantages to be derived from the railway as mentioned by the Court] could with propriety be urged. An examination of the claims showed that the question of advantage or disadvantage to be derived from the introduction of the railway had in no instance been alluded to. The parties seemed unaware of the manner in which their properties would be affected by it, either one way or the other; while there was no admission of contingent benefit to be derived on the one hand, there was no complaint of contingent injury to be sustained on the other, and when this, and the generally impoverished condition of the people were considered together, it was determined that no reduction on account of the prospective advantages which the owners will derive from the railroad should be claimed on the part of Government, and that the offers of compensation should be calculated on the supposed actual value of the property at the time it was taken."³⁹ In case the property taken was land subject to the payment of revenue to the Government, due measures were taken for the appropriate remission in the revenue so payable.⁴⁰

The policy of the Government as regards the respect to be shown to the religious and social sentiments of the general mass of the people while acquiring land for the railway, was equally pronounced. In 1856, while insisting on the need of great caution in taking land for the railway so as not to injure in any way the interests of the parties concerned, the Court of Directors wrote—"We would wish this degree of consideration to be shown especially in cases so keenly affecting the feelings and attachments of the natives of India, as those concerning any rights appertaining to tenure of land, and more particularly

38. Fin. Letter to India, 14 Nov. 1849, No. 27, Rly. Dcs. Beng. Ind. Vol. I, pp. 10-11.

39. Report of C. H. Lushington, Rly. Commsr., of his proceedings in taking the land and other property required for the Railways, 18 Sept. 1851, *Sel. Govt. of Bengal*, No. 4, p. 15.

40. G. Plowden, Sec. to Sudder Board of Revenue, to Lushington, 26 Nov. 1850, Rly. Letts. Encl., Vol. IV.

when such relate to purposes held so sacred by them as those of charitable endowments.”⁴¹ Thus, when in Allahabad in 1857, the acquisition of two plots of land was objected to by the Muslims on religious grounds, the Government gave way to those objections and the matter was settled by reducing the width of the railroad for a short distance.⁴² A similar case occurred in Rajmahal, the land in question containing a Hindu temple. Here also the acquisition was not enforced even though as a result, the railway station built there suffered from some irregularity of form.⁴³

But, the operations in connection with the acquisition of land for the E.I.R. were extensive and the interests involved in such land, complex. The persons handling these affairs on the spot were often people completely ignorant of the social and religious prejudices of the people with whom they had to deal. Under such circumstances certain cases of injustice and maltreatment did occur, and this caused widespread discontent in certain areas along the route of the line. The Patna incident may be cited as an instance. In 1856, wide commotion was created amongst the people of Patna by the activities of the Railway engineers in connection with the cutting down of the centre line of the railway through that city. Houses were destroyed and even sacred places were violated by them without due authority of the Railway Commissioner.⁴⁴ However, the Government of India promptly interfered and the Railway Company was warned against any such future occurrence.⁴⁵

The last point that we would discuss in this section is the nature of the financial burden on the Government in providing the land for the railway. As was expected, the financial burden on the Government in purchasing the land for the railway was not excessive. Even in Bengal, where generally land was more expensive than in other parts of the country, the total cost incurred for the acquisition of land in more than one area

41. Fin. (Rly.) Des. to, 20 August 1856, No. 24, Rly. Des. Beng. Ind., Vol. II, p. 285.

42. Fin. (Rly.) Des. to, 16 Dec. 1857, No. 63, *ibid*, p. 243-244.

43. Fin. (Rly.) Des. to, 14 Oct. 1857, No. 51, *ibid*, p. 201.

44. Fin. (Rly) Des. to, 12 March 1856, No. 10, Rly. Des. Beng. Ind., Vol. II, pp. 183-187.

45. *Ibid*.

was stated to be lower than what was estimated.⁴⁶ In the first two sections, the cost on this account was rather high because of the proximity of these localities to Calcutta. In Howrah district which was nearest to Calcutta, this cost was about Rs. 29,054 per mile.⁴⁷ But as the line extended higher up the country at least within the boundaries of the Lower Provinces of Bengal, land could be obtained at a much cheaper rate. Thus, in certain areas of Rajmahal district, the rate paid was only about Rs. 305 per mile.⁴⁸ The variations in the cost of land for the railway from the lower portions of the line to those higher up in the Lower Provinces of Bengal, can clearly be shown. Thus, the average cost of land per mile in the first two sections of the railway was Rs. 5695.⁴⁹ For the first 164 miles of the railway from Howrah this was stated to be Rs. 4673.⁵⁰ For the portion of the line from Rajmahal to Monghyr, this cost came down to Rs. 992 per mile.⁵¹ We are unable to give similar figures as regards the cost of land provided for the E.I.R. in the N.W. Provinces, and so far as this aspect of the question is concerned, we have to depend on conjectures. The value of land in this province may be taken as higher than that at least in the portions of the line in Upper Bengal. This statement, of course, is more applicable to areas contiguous to Allahabad, the capital of the N. W. Provinces and an important centre not only of the internal commerce of the province but also of its external commerce with the Lower Provinces of Bengal and the foreign countries through the port of Calcutta. As regards the total cost of land on account of the E.I.R. also, our information is limited to that only in Bengal. In 1857, this was estimated to be about Rs. 13,70,122.⁵²

Here, a comparison in the cost of land for railway construction in India and in England may be illuminating. Taking the

46. Fin. (Rly) Des. to, 29 Oct 1856, No. 36. Rly. Des. Beng. Ind, Vol. II, p 329.

47. Fin. (Rly) Des. to, 25 Nov. 1857, No. 59, *Ibid*, p. 237.

48. *Ibid*

49. Fin. (Rly) Des. to, 29 Oct. 1856, No. 36, *Ibid*, p. 329.

50. *Ibid*.

51. Fin. (Rly) Des. to, 14 Oct. 1857, No. 51, *ibid*, p. 200.

52. Fin (Rly) Des. to, 25 Nov. 1857, No. 59, *ibid*, p. 236.

same period, land for railways in England cost much more than in India. The land required for different railways there had to be purchased by the respective railway companies and the cost of construction incurred by them was soaring higher and higher. Thus, apart from stocks and materials, the London and the North Western Railway Company had to pay for the land as well and this was the reason why, even if it was of nearly half the length of that of the E.I.R., the total cost in its case as estimated in 1860 was nearly three times larger than that of the latter.⁵³

Lastly, in connection with this point, i.e. the cost of land provided for the E.I.R., we would try to give an idea as to the proportion that this cost had to the cost of construction of this railway. The average cost of construction of the original trunk lines of railways in India, including the E.I.R., was, as we mentioned, £20,000 per mile.⁵⁴ The average cost on account of land for this line even in the most expensive areas near Calcutta was, as we have seen, Rs. 29,054 per mile.⁵⁵ This is equivalent to about £2905 at s. 2s. pr per rupee—the current exchange rate in the sixties of the nineteenth century.⁵⁶ Thus we may conclude on the basis of these two figures that the cost of providing land for the line even in the most expensive areas traversed by it was roughly about one-seventh of the average cost of construction per mile.

These being the principal points of discussion as regards the provision of land for the E.I.R., we now pass on to the next section dealing with the organisation of the Railway Company along with the subsidiary question of the labour that it employed in the work of construction in India.

53. Report to the Sec. of State for India in Council on Rlys in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (2669), p. 40.

54. *Supra*, Chap. II, p. 36.

55. *Ibid.* p. 99.

56. Report to the Sec. of State for India in Council on Rlys in India for 1862-63, *Parl. Pap.*, (H.C.), 1863, XLIII, (3168), p. 41.

SECTION II

Organisation and Personnel of the E.I.R.

A large undertaking like the E.I.R. obviously needed an efficient management and an organised labour force. So far as the management of the E.I. Rly. Co. was concerned, the degree of efficiency achieved was indeed very high. The affairs of the Company in London were managed by a Board of Directors. The number of the directors was originally thirteen⁵⁷ and later on it was reduced to eight.⁵⁸ The original Board of Directors consisted of persons having long association with India. This included men like Sir George Larpent of Cockerell and Co., B. D. Colvin of the Crawford, Colvin and Co., Sir John Campbell, Deputy Chairman of the P. & O. Steam Navigation Company, Major-General James Caulfield, who had been in the East India Company's service, and Thomas L. Kelsall of Kelsall and Co.⁵⁹ In course of time, the practice originated of having two committees, consisting of certain members of the Board of Directors, the Committee of Transfer and the Committee of Audit. Both had special duties in their respective spheres.⁶⁰ The duties of the Board of Directors were manifold. These included constant correspondence with the Secretary of State, the Board of Agency and Chief Auditor of Calcutta, the shareholders and the public generally; consideration of all questions affecting the policy of the Company and taking decision in respect of them; settlement of all matters relating to the raising of capital; making arrangements for the supply of materials and stores for India; the selection of officers required to fill vacancies in the establishments in India and so on.⁶¹

In India, the Railway Company's affairs were managed by a

57. Thorner, *op. cit.*, p. 61.

58. Letter to the Sec. of State for India on the Constitution and Management of the E.I. Rly. Co., by R. W. Crawford, Chairman of the Company, *Parl. Pap.*, (H.C.), 1867, L, (173), p. 3.

59. Thorner, *op. cit.*, p. 67, note no. 24; also p. 61.

60. Letter to the Sec. of State for India on the Constitution and Management of the E.I. Rly. Co., by R. W. Crawford, Chairman of the Company, *Parl. Pap.*, (H.C.), 1867, L, (173), p. 3.

61. *Ibid.*

local agency. Until the year 1866, these powers of management in India were entrusted to a single person. The position was one of great responsibility and the salary proposed in 1849 was £ 2,500 per annum.⁶² Stephenson, as already mentioned, was the first Agent of the E.I. Rly. Co. in India.⁶³ With the expansion of the operations of the Railway Company, however, the duties and responsibilities of the Agent were increasing. The burden was too much for a single person and naturally, the need was being felt for replacing the single agency by a Board of Agency. This was effected in 1866.⁶⁴ The newly-formed Board of Agency consisted of a chairman and two other members.⁶⁵ Independently of this Agency, an audit department, headed by a Chief Auditor, had been looking after all matters relating to expenditure and accounts of the Railway Company in India.⁶⁶

We may refer here to the relation that existed between the two bodies, the Board of Directors in London and the Agency in India. Situated, though, thousands of miles apart, these two bodies worked, on the whole, in harmony. The higher authority rested with the Board of Directors in London while the Agency was given wide discretion in all matters of detail. Crawford wrote in 1867—"at the same time the practical difficulties inherent in the local management of the affairs of a great concern, such as our Railway Company, at a distance many thousand miles apart from the seat of the governing authority, have been satisfactorily solved. The supreme authority of the Directors remains intact ; whilst the details of the local administration are still as little interfered with as possible, so long as they conform to the general rules of procedure prescribed from this country."⁶⁷ So, in spite of the dis-

62. Noad to Melvill, 6 Dec. 1849, Rly. Home Corrs., 'A', Vol. II.

63. *Supra*, Chap. I, p. 7.

64. Letter to the Sec. of State for India on the Constitution and Management of the E.I. Rly. Co., by R. W. Crawford, Chairman of the Company, *Parl. Pap.*, (H.C.), 1867, L, (173), p. 5.

65. *Ibid.*

66. *Ibid.*, p. 3.

67. Letter to the Sec. of State for India on the Constitution and Management of the E.I. Rly. Co., by R. W. Crawford, Chairman of the Company, *Parl. Pap.*, (H.C.), 1867, L, (173), p. 1.

tance, affairs of the Railway Company were carried on smoothly. It was only very rarely that difficulties arose in connection with the exercise of the discretionary powers of the Agency in India, and even in those cases, it was not long before that matters were amicably settled. Stephenson's contracting for the entire line from Burdwan to Delhi in 1854, without waiting for the approval of the Board of Directors, was one such occasion which we have already referred to.⁶⁸ The matter was thoroughly investigated by the legal advisers of the Railway Company in London and their opinion was that in concluding these contracts, Stephenson was fully within the limits of his jurisdiction.⁶⁹

So far we have limited our observations to the internal management of the E.I. Rly. Co. The management of this Railway Company, like that of all other guaranteed companies of the period, had another important aspect, namely, the control and supervision exercised by the Government. Under the terms of the contracts between the East India Company and the respective railway companies, the former was given some powers of supervision over the affairs of the latter.⁷⁰ This was quite logical in view of the Government aids to the railway companies, specially in the form of guaranteed interests. As we have mentioned earlier, as long as the capital invested in these undertakings remained unproductive, the payment of these guaranteed interests was to remain a burden presumably on the Indian Exchequer. As the guardian of the public purse, the Government had every right to see that the public money was not wasted and frittered away due to the neglect and the lack of exertion on the part of the railway officials leading to expensive works executed over an unnecessarily prolonged period.

The Government decision as to the nature of the supervision to be exercised over the railway company's affairs was very reasonable. In 1854, the Court of Directors wrote,—“.....

68. *Supra*, Chap. I. p. 13.

69. Messrs Freshfield, E.I. Rly. Co.'s Solicitors to Noad, 2 July 1855, Rly. Home Corrs., 'A', Vol. IX.

70. See, for instance, the text of the contract between the East India Company and the E.I. Rly. Co., dated 17 August 1849, clause 10, *Parl. Pap.*, (H.C.), 1859, XIX, (259), p. 3.

that the system of minute supervision will not be so exercised as to subject operations to delay, or discourage contractors from taking works that might with advantage be let to them.”⁷¹ Under the rules that were subsequently established, the railway companies had to refer to the Government for decision all questions of general importance only. These included the general direction of all lines of railway, the position of stations, the general arrangements of the more important stations and works. Once the general sanction of the Government was secured, all questions as to details including those of designs, estimates and indents of these works could finally be disposed of by the Consulting Engineer.⁷²

But, what was done in practice by the Government of India, at least in the early years of railway construction there, was not any general supervision of railway works. It was, in fact, interference in an undue manner in every minute affair relating to the work of construction. This was the position not only in respect of the E.I. Rly. Co.’s works in Bengal but also in the case of the railway companies working in Madras and Bombay.⁷³ Several instances relating to the experiences of the E.I. Rly. Co. specifically may be cited here. In one instance, E. Palmer, the Agent of the Railway Company was about to cancel the idea of an agreement for a certain quantity of timber since he was asked by the Government to submit such detailed information as to that contract, as it was beyond his power to furnish.⁷⁴ In another instance, the engineers in charge of the work of construction in the Hulohur Valley had to live in a tent and a mat bungalow for an indefinite period of time. The indents for the bungalows for these people were duly submitted to the Government. But these were withheld pending a return from the Railway Company giving detailed information regarding similar bungalows to be erected on a long stretch of

71. Fin. (Rly) Des. to, 5 July 1854, No. 10, Rly. Des. Beng. Ind., Vol. II, p. 31.

72. Report to the Sec. of State for India in Council on Rlys in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (2669), pp. 6-7.

73. Report the Sel. Com. on East India (Rlys), 13 July 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. V.

74. Minutes of Evidence taken before the Sel. Com. on East India (Rlys), *ibid*, p. 51, Q. 764.

the line extending over 300 miles and this was not found practicable to produce for some time to come with any accuracy.⁷⁵ In 1858, Noad said that the railway engineers were unnecessarily interfered with ; they were called upon from morning till night for papers, returns, documents and explanation.⁷⁶ The voluminous correspondence between the railway officials and the Government authorities over every aspect of the work, from the selection of the route in a particular area to the addition of one or two extra men to the existing staff of engineers in any area, preserved amongst the Government records, leaves no doubt about the validity of these statements. Stephenson spoke of the misconception on the part of the Government "as to the intention, spirit, and practical course to be pursued in the exercise of the supervision both home and local".⁷⁷ That the Government supervision over railway works in India was to some extent vexatious, was admitted by the Government officials, too. Thus, Melvill, the first Government Director of Railways in London, stated in 1858,—“I do not think that the position of the railway authorities and of the Government authorities relatively to each other was quite understood at first ;”⁷⁸ The Select Committee appointed in 1858 to enquire into the causes of the delay in the railway construction in India alluded to the too minute interference by the Government in the work of railway construction in India and this was, in the opinion of the Committee, unnecessary for practical economy and involved “constant controversy, lengthy correspondence, and consequent delay,”⁷⁹

In view of the cumbrous nature of the Indian administration in those days, it is not very difficult to imagine how inconvenient this continuous interference by the Government in the railway construction in India could be, sometimes, to the entire progress of such construction. Again, occasionally the Govern-

75. Minutes of Evidence taken before the Sel. Com. on East India (Rlys), 13 July 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 44, Q. 639.

76. *Ibid.*, p. 43, Q. 632

77. *Ibid.*, p. 283, Q. 4015.

78. *Ibid.*, p. 258, Q. 3660.

79. Report from the Sel. Com. on East India (Rlys.), 15 July 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV (416), p. V.

ment of India thought it necessary to refer matters to the Home Government. This meant greatly delaying the whole proceeding not only because of the time involved in the passage between England and India in those days of limited communication but also due to the intricate administrative machinery operating there, authority being divided between the Court of Directors and the Board of Control.⁸⁰ We may cite another instance here. With the object of undertaking a survey in the winter of 1851-52 in the country between Burdwan and Rajmahal for the proposed extension of the E.I.R. in that direction, the Railway Company submitted quite ahead of that time, namely, in May 1851, an indent for ten surveying engineers to be sent from England.⁸¹ The indent, though agreed to by Baker, the Government Consulting Engineer, was withheld by the Government of India pending the Court's sanction for the proposed extension of the line itself.⁸² It was not before the end of August that this sanction was received in India,⁸³ leaving, therefore, very little time for the indent to be sent to England and complied with therefrom, so as to utilise the coming winter. Actually, even by the end of October, the engineers indented for did not arrive in India and the Railway Company had to make the survey with the very limited assistance that they could secure in India.⁸⁴ This was, of course, the state of affairs in the early years of the railway construction in India. In the later years, the Government interference in the work of construction was not so much complained of by the Railway Companies.

Now, we turn to the discussion of the Railway Company's staff in India and the labour employed by the Company. Railways being essentially large industrial and commercial undertakings, the questions relating to their personnel are many and varied. These include the methods of their recruitment, their pay, house accommodation, training, recreation and so on. But

80. *Supra*, Chap. I, pp. 11-12.

81. Indent No. 43 of the E.I. Rly. Co., 29 May 1851, Rly. Letts. Encl., Vol. IV.

82. Dalhousie's Minute, 25 August 1851, Rly. Letts. Encl., Vol. IV.

83. Fin. (Rly) Des. to, 20 August 1851, No. 45, Rly. Des. Beng. Ind., Vol. I, p. 114.

84. Stephenson to Baker, 28 Oct. 1851, Rly. Letts. Encl., Vol. IV.

any detailed discussion of these questions in the present context is not possible. The reasons are two-fold ; first, like many other questions relating to railway construction in India in this early period, the rules and regulations as regards these matters in respect of various railway companies could not be said to have taken as yet a definite shape ; secondly, our information also in this respect is meagre.⁸⁵ The scope of our present study is, therefore, very limited.

First of all, we refer to the engineering staff employed by the Railway Company. For the purpose of engineering supervision, the entire line was divided into two main divisions, one in the Lower Provinces of Bengal and the other in the Upper Provinces. Each of these divisions was under the charge of a Chief Engineer. Turnbull was the first Chief Engineer in the Lower Provinces and in the Upper Provinces, this position was held first by E. Purser.⁸⁶ The pay proposed for the office of the Chief Engineer in the early days of the construction of the experimental line was £2,000 per annum.⁸⁷ The engineering establishment under the charge of the Chief Engineer in a division was the following. In each district, there was a District Engineer, a Resident Engineer, and two Assistant Engineers and a given number of Inspectors according to the length of the line under the charge of the District Engineer.⁸⁸ The office of a District Engineer was quite a responsible one and the salary paid was stated in 1850 to be £1,300 per annum.⁸⁹ Resident

85. From the kind of materials used by P. W. Kingsford in his thesis on the railway labour in England (Railway Labour, 1830-1870, a thesis approved for the Ph.D. degree of the University of London in 1951), it seems that the minutes of the E.I. Rly. Co., itself might be valuable sources of information in this respect. But these minutes which were in the custody of the India Office Library, had, for their major part, since been destroyed.
86. Minutes of Evidence taken before the Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 51, Q. 758.
87. Melvill to Noad, 9 Feb. 1850, Railway Home Correspondence, 'B', (abb. Rly. Home Corrs., 'B'), Vol. I, p. 25.
88. Minutes of Evidence taken before the Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 52, QQ. 767-768.
89. J. D. Dickinson, Dy. Sec., East India House, to Noad, 8 August 1850, Rly. Home Corrs., 'B', Vol. I, p. 55.

Engineers also commanded a good salary. In 1864, the Resident Engineer of the Barakār Extension was drawing a salary amounting to Rs. 800 per month.⁹⁰ In order of importance of the respective positions, next came the Assistant Engineers. In 1862, the Assistant Engineers in the Keul and Hullohur division and the Patna division were being paid about Rs. 409 each per month.⁹¹ The pay of the Inspectors was stated in 1850 to be £5 a week.⁹²

Apart from this engineering staff, the Railway Company needed a large number of lower categories of skilled labour for the actual work of construction of both the line and the carriages. These included the plate-layers, the brick-layers, carpenters, draftsmen and so on. In 1862, plate-layers in the service of the E.I. Rly. Co. were being paid Rs. 200 per month, the brick-layers, Rs. 125 per month, the carpenters, Rs. 110 per month, and the draftsmen, Rs. 60 per month.⁹³ The blacksmiths and the permanent-way mechanics were other two categories to be mentioned here. The blacksmiths had the salary of Rs. 10 to Rs. 14 per month and the permanent-way mechanics were earning from Rs. 17 to Rs. 6 per month.⁹⁴

The work of running the railway needed a separate establishment. The scale of pay proposed in 1855 for the engine-drivers to be employed by the E.I. Rly. Co. was Rs. 196-5-9 for the first two years and Rs. 218-2-10 for the remainder of their service.⁹⁵ The pay of the guards employed by the different railway companies of the period varied from £7-10-0 to £15 a month, according to their length of service and merits.⁹⁶

A third category of jobs was that relating to the administrative aspect of the undertaking. In this category, the station-masters and the accountants were drawing Rs. 200 and Rs. 220

90. Staff list of the E.I. Rly. Co., 1 Jan. 1864, p. 8, Accountant General's Dept. (abb. AC/G), Range 63, vols. LVII-LVIII.

91. Staff list of the E.I. Rly. Co., 1 Jan. 1862, p. 1, *ibid.*

92. Turnbull to Noad, 1 July 1850, Rly. Home Corrs., 'A', Vol. II.

93. Staff, list of the E.I. Rly. Co., 1 Jan. 1862, pp. 2-3, AC/G, Range 63, Vols. LVII-LVIII.

94. *Prices and Wages in India*, 1890, p. 180.

95. Hodgson to Stephenson, 3 July 1855, Rly. Lett. Encl., Vol. XI.

96. Report to the Sec. of State for India in Council on Rlys. in India for 1860-61, *Parl. Pap.*, (H.C.), 1861, XLIII, (2826), p. 8.

per month, respectively.⁹⁷ The pay of a ticket-collector was within the range of Rs. 100-0-0 per month and that of a clerk varied from Rs. 35 to Rs. 150 per month.⁹⁸

All these different types of work in the service of the various railway companies were held during our period by men sent from England. The reason was the difficulty of securing comparably trained people in India. The maintenance of this European staff was highly expensive. The pay of these men, including the additional allowances and passage money between England and India, was sometimes double or treble the amount paid for the same kind of work even in England.⁹⁹ Besides, the cases of sickness and eventual death due to the adverse effects of the climatic conditions in India were frequent amongst these people and this meant not only great financial loss for the railway companies but also the untimely loss of the services of many highly capable men.¹⁰⁰

Insistence on the part of the authorities was, therefore, on the employment of the local people in the railways in India as far as possible by providing adequate facilities for their necessary training. In connection with a scheme for training local people in India as engine drivers, the Court of Directors wrote in 1855 that the scheme was desirable "not only for the purpose of rendering the Railway Company independent of European engine drivers, but also for carrying out the principle of employing native labor [Sic.] wherever practicable. We hope that the native apprentice will prove his fitness for the duty in question as much by calmness and self-possession as by steadiness and punctuality".¹⁰¹ In connection with the construction of the E.I.R. specifically, a surveying school was established in Calcutta as early as 1851 and the students of this

97. Staff list of the E.I. Rly. Co., 1 Jan. 1862, pp. 1-2, AC/G, Range 63, Vol. LVII-LVIII.

98. *Ibid.*

99. Report to the Sec. of State for India in Council on Rlys. in India for 1863-64, *Parl. Pap.*, (H.C.), 1864, XLIII, (3354), p. 6.

100. *Ibid.*

101. Fin. (Rly) Des. to. 26 Sept. 1855, No. 26, Rly. Des. Beng. Ind. Vol. II, pp. 135-136.

school were reported to be doing very well.¹⁰² In the late fifties, engineering colleges were started both in Calcutta and Roorkee.¹⁰³

Local people were being employed in increasing numbers as carpenters, masons, blacksmiths, station masters, accountants and clerks. As an instance of the proportion in which the local people and the Europeans were employed in railway works in India, it may be mentioned here that in 1866-67, out of 114 station-masters on the E.I.R., 74 were Indians, 35 were Europeans and five were East Indians.¹⁰⁴ The pay was much lower in the case of the country people. Thus, on the E.I.R., as station-masters, Europeans were receiving from 150 to 350 rupees a month and the local people in the same position were drawing from twenty rupees to 200 rupees a month.¹⁰⁵

The large body of unskilled labour required by the E.I.R. was secured from the local sources. In fact, railways and other public works in India in the latter half of the nineteenth century created opportunities for employment of a large section of the poorer people there and thus enabled them to earn some extra income.¹⁰⁶ The rate paid by the railway companies was higher than that usually paid in the country,¹⁰⁷ though it was not very much when compared to the labour rate in England in those days.¹⁰⁸ For ordinary labour employed by the E.I.R.

102. Narrative of the proceedings of the Govt. of Bengal for June 1851 by Sir John Hunter-Litter, Dy. Govr. of Bengal, Rly. Letts. Encl., Vol. III.

103. Minutes of Evidence taken before the Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 287, Q. 4071.

104. Report to the Sec. of State for India in Council on Rlys. in India for 1866-67, *Parl. Pap.*, (H.C.), 1867, L, (3856), p. 11. The term 'East Indians' was in use in the 19th century to mean the Anglo-Indians of to-day. This latter term, i.e. Anglo-Indians, had officially been adopted since the census of 1911. c.f. *Report of the Census of India*, 1911, Vol. 1, part 1, p. 140.

105. *Ibid.*

106. D. R. Gadgil, *The Industrial Evolution of India in Recent Times*, (Calcutta, 1950), pp. 18-19.

107. Minutes of Evidence taken before the Sel. Com. on East India (Rlys), *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 238, Q. 3382.

108. *Ibid.*, p. 55, Q. 810.

in India the rate paid was 2½d or 3d per day.¹⁰⁹ In the period following the Mutiny, a further increase in the rate paid for labour was reported.¹¹⁰ The men employed on the E.I.R. belonged to various aboriginal tribes, the Santals, the Dhargurs and different kinds of hill tribes.¹¹¹

We intend to limit our observations only to these limited aspects of the personnel of the E.I.R. As we have stated earlier, questions relating to this aspect of the history of this undertaking are many and varied. But, because of the absence of the relevant data, these are bound to remain unexplored.

109. Minutes of Evidence taken before the Sel. Com. on East India (Rlys), *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 54, Q. 807.

110. *Ibid*, p. 54, Q. 797.

111. *Ibid*, p. 241, Q. 3420,

CHAPTER V

CONSTRUCTION OF THE E.I.R. : 1851-1870

The object of this chapter is to narrate the story of the actual construction of the E.I.R.—the main line and the branches as described in the first chapter. The total length of these lines was estimated in 1860 to be 1,338 miles.¹ The construction of these lines, because of various obstacles, ultimately proved to be a difficult task. Of all these obstacles, the provision of materials remained the principal one all along the line. Dependence on England for the iron-work needed for the lines and bridges was a fact taken for granted at least in these initial days of railway construction in India for obvious reasons. The manufacture of the complicated iron-work for different component parts of railways such as engines, carriages, and bridges require a certain standard of industrial skill, efficiency and discipline which was yet to develop in the nineteenth century India.² As it was put by Simms—"It will be impossible that these things (i.e. Rails, etc.) can be produced in this country so good and so cheaply as they can be supplied in England for many years to come ; there the iron-works preceded the introduction of the modern form of the railway but here railways must precede the iron-works, and to which they will probably give rise. Hereafter it is probable that the renewal of the rails, engines and other machinery may be effected in India, but at the present the supplies must be obtained from England. . . ."³ Great hopes were entertained that sleepers could be provided from the local sources and also that extensive use could be made of indigenous materials like bricks and stones in the construction work. But these expectations could not be realised because of the absence in India of that kind of organised trade activities in respect of these articles which alone could respond to such an extensive demand as that created by the

1. Report to the Sec. of State for India in Council on Rlys in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (2669), p. 8.

2. *Infra*, Chap. VI, pp. 150-151.

3. Simms' Remarks, 22 August 1850, para 6, Rly. Letts. Encl., Vol. II.

railways. In this context, the following statement of E. Purser, Chief Engineer of the E.I. Rly. Co. in the N. W. Provinces, in his letter to Stephenson in connection with the construction of a stone-bridge over the river Tons in Mirzapur district is noteworthy,—“.....I beg earnestly to bring to your notice that the time occupied about these structures particularly in India does not consist so much in the building of them, but in getting and preparation of materials—that the former can always outrun the latter, and that the latter might and should be proceeding vigorously even if the plan of structure be not easily determined. If it is only settled that the pillars are to be of stone, stone should now be quarrying and led to it, without reference to spans or profile of work. In the same manner with timber if such were adopted, and other things.”⁴ Sleepers in large quantities for the portion of the line in the Lower Provinces at least had to be brought from England and brick and stone in most cases were substituted by imported iron. Thus, almost the entire set of materials had ultimately to be brought from England. But, much more serious than this in causing delay to the work of construction, these materials had to be carried from Calcutta up the country to the respective points on the lines in country boats along the Nadia rivers and the Ganges—the principal means of communication for this kind of traffic in this part of India—the difficulties attending the journey along which we have already referred to.⁵ The story of the construction of the E.I.R. will be told here with particular reference to the problem of securing materials for it.

The first portion of the line to be constructed, as pointed out already, was a short, experimental one, running from Howrah to Raniganj, about 121 miles.⁶ The work of construction began in 1851. Railway construction by contractors had by this time become common both in England and on the contin-

4. Purser to Stephenson, 11 Oct. 1855, Rly. Letts. Encl. Vol. XII.

5. *Supra*, Chap. III, pp. 68-69.

6. *Supra*, Chap. II, pp. 25-26. The original railway lines in India, including the E.I.R., were initially laid as single lines of railway and the work of doubling them was undertaken later on. So far as the E.I.R. is concerned, the work of doubling it began sometime in 1855, c f. Fin. (Rly) Des. to, 5 Sept. 1855, No. 21, Rly Des Beng. Ind., Vol. II, p. 109.

ent. This was found to be economical and also advantageous since the contractors generally had command over large bodies of technical men.⁷ The system was tried in the railway construction in India also. Attempts were made by the E.I. Rly. Co., in the early days of the construction of the line projected, to enter into agreements with some of the well-known English contractors, such as William Jackson and Thomas Brassey. But these did not materialise. Jackson's tender was rejected on the ground of high charges⁸ and Brassey refused since he disliked the idea of strict government supervision of the work of construction as proposed under the terms of the contract.⁹ Works not only on the experimental line but also on all other portions of the entire line were actually entrusted to European contractors resident in India. These people, with few exceptions, were almost totally inexperienced in the type of work they undertook and had little capital. Failure on the part of contractors naturally remained a common feature to all parts of the line.¹⁰ So far as the experimental line was concerned, 95 miles of it were constructed by Messrs Hunt, Bray and Emsley and Burn and Co., and the rest by the railway engineers themselves on the failure of the respective contractors.¹¹

From the engineering point of view, the principal work on the experimental portion of the line was to protect it from the floods of the river Damodar.¹² The problem was a serious one and it was not very easy to find an effective solution for it. Kennedy, because of the gravity of the problem, questioned in 1851, the very decision of the Government to take the line through the right bank of the Ganges. He wrote, "...much

7. Jenks, *op. cit.*, pp. 134-138, 200-201.

8. James Wilson, President of the India Board, to Melvill, 20 Oct. 1849, Rly. Home Corrs., 'A', Vol. II.

9. Minutes of Evidence taken before the Parl. Sel. Com. on East India, (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 59, Q. 904.

10. E. Davidson, *The Railways of India*, (London 1868), pp. 146-148.

11. Minutes of Evidence taken before the Parl. Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 35 Q. 493.

12. *Supra*, Chap. III, Minutes of evidence taken before the Com. on East India (Rlys), 1858, pp. 78-79.

previous consideration and some preliminary outlay would be required in dealing with the very difficult question connected with the periodical inundations here, both as regards the permanent security of the works and their first cost".¹³ A variety of projects were suggested to deal with this problem which included the construction of new embankments from north to south, draining the surplus water of the Damodar by means of navigable and other canals leading into the Hooghly, removal of the bunds on the right bank of the river and allowing the floods to discharge their waters by that measure and so on.¹⁴ Numerous flood openings, in addition to large bridges over the three rivers, the Bally Khal, the Saraswati and the Magra, were provided and the cost incurred, with respect to the portion of the line between Howrah and Hooghly, about 26½ miles only, was estimated once at 5,00,000 rupees.¹⁵ But, obviously the measures taken were not very successful in dealing with the problem. Long after this period, even in 1943, when the river Damodar was over-flooded, and breaches occurred in the embankments, the area below the city of Burdwan was submerged at some places below six or seven feet of water. From 18 July to 8 October of that year, all traffic between the stations on the E.I.R. below and above Burdwan had to be suspended. The cost of the traffic diversions on this railway amounted to more than 53,00,000 rupees and the cost of repairs to roads and the railway, including the construction of new waterways, culverts and bridges, was even greater.¹⁶

So far as the provision of materials was concerned, unlike that for the other portions of the main line, this was accomplished with comparative ease in the case of this experimental portion of the line. The shipment in England of the iron-work needed for the line began from a very early period. The price of iron was cheap in the English market during this period and the supply abundant. In 1850, Simms stated it to be very low, the price being £7—15s—Od. per ton for rails and

13. Kennedy's Report, 21 Jan. 1851, *Sel. Govt. of India*, No. 1, p. 36.

14. Remarks by the Military Board on the proposals brought forward for the drainage of the tract between the Damodar bunds and the Railroad, 17 Oct. 1851, *Rly. Letts. Encl.*, Vol. V.

15. Baker to Stephenson, 12 Dec. 1851, *ibid.*

16. *Preliminary Memorandum on the United Development of the Damodar River* (Calcutta 1945), p. 20.

£5—10s—Od. per ton for cast iron chairs.¹⁷ Freight in the India-bound vessels was not yet a problem and the rate of freight was never complained of. The first parcel of rails for the experimental line was shipped in 1850.¹⁸ By August 1853, with the exception of 2000—3000 tons of rails, the whole of the iron-work required for the line was shipped.¹⁹ This included also the three iron bridges built on Warren's principle, a new invention in England in those days, for the three large rivers in the course of the line, the Bally Khal, the Saraswati and the Magra.²⁰ Even the inland transport of this heavy iron-work was not a great difficulty. It was due to the fact that the total stretch of this line was never very far from Calcutta where vessels from England were unloaded and almost the entire length of the line was easily accessible by the available water and overland communications. From Howrah to the point where it took a gradual turn to the west, the line ran almost parallel to the river Hooghly, which being in the close proximity to the sea, was more navigable here and was much in use for the transport of railway materials. In February 1851, the *Friend of India* wrote, ".and not a day passes without the cheerful sight of boats laden with rails and sleepers, and redolent of creosote,²¹ passing the river".²² So far as land transport was concerned, cart-loads of railway materials were sent along the Grand Trunk Road, extending along the entire region from Calcutta to Burdwan, and even beyond that place,

17. Simms' Further Report, 29 April 1850, para 47, Rly. Letts. Encl. Vol. II.

18. Noad to Stephenson, 22 Oct. 1850, Rly. Home Corrs., 'A', Vol. II.

19. Board of Directors of the E.I. Rly. Co. to J. Hodgson, Offg. Agent in India, 23 August 1853, Rly. Home Corrs., 'A', Vol. V.

20. Fin. (Rly) Des. to, 7 Jan. 1852, No. 3, Rly. Des. Beng. Ind., Vol. I, p. 146.

21. Bethell's creosoting process was then much in use in England for preserving timber from the adverse effects on it of climate, worms, etc. Timber was susceptible to quick decay specially in the Lower Provinces of Bengal due to the moist climate and ravages of white ants. With the expectation that timber from the local sources could be used for railway purposes, the entire apparatus needed for the process was sent from England at an early period; c.f. Melville to Noad, 13 Nov. 1850, Rly. Home Corrs., 'B', Vol. I, pp. 65-66.

22. *The Friend of India*, 6 Feb. 1851, p. 771.

of course with a break involved in the crossing of the Hooghly near Palta Ghat.²³

Some difficulties, however, were experienced in procuring sleepers for the line under construction. It was almost taken for granted that sleepers for this line could be secured from local sources. The Court of Directors wrote in 1852—"India will be found to possess ample means for the supply of timber, which when creosoted, will make excellent sleepers."²⁴ In practice, however, it was found that the price asked for sleepers in Calcutta was too high, in most cases even higher than that at which sleepers, readily creosoted, could be imported there from England. Of the indigenous woods, Teak and Sissu were highly recommended by the railway engineers for use in railway works.²⁵ But, both these kinds were too expensive in the Calcutta market and this precluded, from the very beginning, the possibility of their being used to any considerable extent in the line. In the first four tenders submitted towards the end of 1850, the price asked for Teak sleepers, for instance, was three rupees each.²⁶ In all the subsequent tenders submitted for this kind of sleepers, the price remained equally high.²⁷ This was also the case with Sissu sleepers.²⁸ The kind of wood which was in extensive use throughout the Northern part of India for various purposes was Sal, its price being moderate and the supply, in relation to the existing demand, more or less abundant. But, the price of sleepers, made of this kind of wood as well, showed a tendency to rise, which was obvi-

23. Minutes of Evidence taken before the Parl. Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 41, Q. 608.
24. Fin. (Rly.) Des. to, 7 Jan. 1852, No. 2, Rly. Des. Beng. Ind.. Vol. I, p. 131.
25. Turnbull's Report on the Experimental line, 29th May 1850, Rly. Letts. Encl., Vol. II.
26. Extract from the Minutes of a Meeting held at the offices of the E.I. Rly. Co. in Calcutta, 11 Nov. 1850, Rly. Letts. Encl., Vol II.
27. Remarks by Baker on the letter dated 7 April 1852 of Lieut. Col. P.T. Cautley, Director of the Ganges Canal Works, to W. Muir, Sec. to Govt. of N. W. Provinces, 3 May 1852, Rly. Letts. Encl., Vol. VI.
28. *Ibid.*

ously due to the sudden demand created by the railway. The price initially asked for this kind of sleepers was Rs. 1-12-0 each.²⁹ But, subsequently, it went up to Rs. 2-10-0.³⁰ In fact, the position of the entire timber market in Bengal was precarious. The average price quoted in the seven tenders received on 13 March 1851 was Rs. 6-3-0 for each sleeper, the highest being Rs. 8-12-0 each and the lowest, Rs. 2-10-0 each.³¹ About the same period, creosoted fir sleepers were available in England at 3s. 3d. each, i.e., Rs. 1-10-0 per sleeper³² and even including the transport cost, estimated at about 1s. 3d. per sleeper, these could be imported into Calcutta at a cheaper rate than that at which local sleepers could be procured there.³³ Stephenson wrote with reference to this high price asked for sleepers in Calcutta that it was unbelievable that a material like wood could command such a price in the market.³⁴ Baker was of the opinion that the prices demanded were almost prohibitory for the use of that material in railway works.³⁵

Apart from this high price, the other difficulty experienced was the failure of contracts. Throughout the period that the experimental line was under construction, every opportunity was explored for procuring sleepers from the local sources whenever prices asked for them were reasonable. Contracts were entered into from time to time. But the failure of contracts was very frequent³⁶ and this caused immense difficulties.

Under these circumstances, there was no other option but to depend on imported English sleepers. England during this

29. Extract from the Minutes of a meeting held at the offices of the E.I. Rly. Co. in Calcutta, 11 Nov. 1850, Rly. Letts. Encl., Vol. II.

30. Hunter-Litter to Court, 20 June 1851, para 4, Rly. Letts. Encl., Vol. III.

31. Turnbull to Noad, 20 March 1851, Rly. Letts. Encl., Vol. IV.

32. Fin. (Rly) Des. to, 7 Jan. 1852, No. 2, Rly. Des. Beng. Ind., Vol I, p. 131.

33. *Ibid.*

34. Stephenson to Noad, 20 March 1851, Rly. Letts. Encl., Vol. III.

35. Baker's Note (No date given) on Stephenson's letter to Noad, 20 March 1851, Rly. Letts. Encl., Vol. III.

36. Remarks by Baker on Turnbull to Stephenson, 12 May 1852, (No date given for these remarks), Rly. Letts. Encl., Vol. VI.

period was importing a large quantity of timber—specially Memel Fir from the Baltic countries such as Sweden and Norway—for building ships, houses and machinery.³⁷ The supplies were constant and price condition naturally normal.³⁸ The transport between England and India, though limited during this period, was regular and the elements of uncertainties leading to high transport cost as was the case with the existing communications in India in the pre-railway age, were absent here. So, the use of imported sleepers for the line under construction was found both cheaper and convenient. Practically 79 miles of the total length of the 121 miles of the experimental line were laid with Memel Fir sleepers and another seventeen miles with cast iron sleepers also supplied from England. It was only about 25½ miles of this line which were laid with sleepers made of Indian wood, which was mostly Sal.³⁹

At this stage, we may refer to the causes of high price and irregular supply of timber in the Calcutta market. Complete mismanagement and a large-scale wastage in the forests supplying timber to Calcutta, and also the poor and limited means of conveyance through which supplies used to come to that city, were responsible for the precarious conditions in the Calcutta timber market. For the past few years, a demand was being created in Calcutta for timber to meet the needs of the growing ship-building industry there and also those of the indigenous boat-building and house-building industries throughout the interior of the province.⁴⁰ Teak was supplied mainly from Moulmein, the principal port of the British province of Tenasserim, and also to a very limited extent, from Rangoon, the contiguous Burmese port.⁴¹ The forests in Tenasserim and Lower Burma supplying these ports, i.e., Moulmein and Ran-

37. J.R.M. McCulloch, *A Dictionary of Commerce and Commercial Navigation*, New edition edited by H. G. Reid, (London 1871), p. 1388.

38. *Ibid* p. 1388.

39. Statement of Permanent Way Materials taken out and put into the road between Howrah and Raneegunge during six months ending 30 June 1858, dated 18 August 1858, Statement 'B', by Turnbull, Rly. Letts. Encl., Vol. XVIII.

40. Report of the Military Board, 28 Oct. 1853, Beng. Rly. Cons., 29 Dec. 1853, No. 52. Range 163, Vol. XVII.

41. Report of M. E. Daniel, 9 June 1851, Rly. Letts. Encl., Vol. IV.

goon, were subject to indiscriminate felling for both household and commercial purposes—export to England being the main incentive so far as the latter were concerned.⁴² This indiscriminate felling without any attempt at re-planting led almost to a complete exhaustion of the forests by the middle of the nineteenth century.⁴³ Under these circumstances, the supply to Calcutta was very limited⁴⁴ and this alone could sufficiently account for the high price of this kind of timber in Calcutta. Over and above that, there were certain other factors. Timber felled from the forests in Tenasserim and Lower Burma was subject to the payment of several inland duties⁴⁵ and the rate of freight and insurance in the government steamers to Calcutta, the only available means of transport for the distance involved, were very high, amounting to twenty rupees per ton.⁴⁶ All these led to a very high price of Teak in Calcutta, Rs. 62-8-4 per ton as estimated in 1851.⁴⁷

For Sissu and Sal, Calcutta was dependent on Moorung or the Nepal Tarai to the north of Bengal. Sissu being a rare tree, its supply was very limited and the price very high. The Nepal Tarai was in fact a part of the vast stretches of Sal forests extending all along the Southern base of the Himalayas. The greater portion of this forest remained inaccessible because of their density, extreme unhealthiness and the complete lack of any means of communication. Felling operations were carried on only in areas nearer to human localities.⁴⁸ H. Falconer, the Superintendent of the East India Company's Botanic Gardens in Calcutta wrote in January 1851—"The Saul tree of Hindoostan extends in a nearly unbroken belt of forest along the Terai, from the Ganges at Hurdwar to the Burrampooter, and it is felled to an extent unknown even in the most wasteful parts of the Teak forests".⁴⁹ The result was that good

42. Report of M. E. Daniel, 9 June 1851, Rly. Letts. Encl., Vol. IV.

43. *Ibid.*

44. *Ibid.*

45. *Ibid.*

46. *Ibid.*

47. *Ibid.*

48. Report of the Military Board, 28 Oct. 1853, Beng. Rly. Cons., 29 Dec. 1852, No. 52, Range 163, Vol. XVII.

49. Report on the Tenasserim Teak forests by H. Falconer, 23 Jan. 1851, *Sel. Govt. of Bengal*, No. 9, p. 29.

Sal timber was becoming scarce in Calcutta and other timber markets along the Ganges.⁵⁰ The usual way of sending this timber down to Calcutta was to raft them down the Ganges and its southern tributaries, the Nadia rivers, combining in the united stream of the Hooghly. These Nadia rivers being open for only three months in the whole year,⁵¹ the rafting operations were very limited. Even during that period, the required depth for rafting might not be secured in all parts of these rivers.⁵² Naturally the Government imposed certain restrictions on the number of logs that could be loaded in a single raft.⁵³ To load the timber in boats was a safer course and the time involved in such a journey also might be shorter.⁵⁴ But, this was much more expensive and was hardly resorted to by the timber merchants.⁵⁵

While this was the position as regards the existing sources of supply, attempts to open up new sources had little possibility of being successful. During the year 1852-53 when the experimental line of the E.I.R. was still under construction, a country-wide search was made under the auspices of the Board of Revenue of the Lower Provinces and also of the Military Board, to open up new sources where timber for the railway could be secured at reasonable prices. These enquiries revealed the same story of very poor state of communications in the areas concerned, due to which, in these cases also, there was

50. Report of the Military Board, 28 Oct. 1853, Beng. Rly. Cons., 29 Dec. 1852, No. 52, Range 163, Vol. XVII.

51. *Supra*. Chap. III, pp. 68-69.

52. Major J. Lang, Suptdt., Nadia Rivers, to Sec., Military Board, 16 April 1853, para 2, Beng. Rly. Cons., 21 July 1853, No. 5, Range 163, Vol. XVII.

53. H. Dear, Timber Contractor, to Stephenson, 17 Feb. 1853, Beng. Rly. Cons., 21 July, 1853, No. 2, Range 163, Vol. XVII.

54. *Ibid*.

55. Long to sec., military Board, 16 April 1853, para 9, Beng. Rly. Cons. 21 July 1853, No. 2, Range 163, Vol. XVII.

56. There was a considerable supply of Sundri wood in Calcutta from the Sundarbans stretching along the southern coast of Bengal. But, these timbers could never be procured in large enough sizes and so, they were generally regarded as useless for railway purposes. c.f. Report of the Military Board, 28 Oct. 1853, Beng. Rly. Cons., 29 Dec. 1853, No. 52, Range 163, Vol. XVII.

the emergence of that apparently anomalous position when timber imported from England rather than collected from these indigenous sources was found to be cheaper. Thus, sleepers, if made of wood from Assam forests, were estimated to cost in Calcutta not less than eight rupees each. This was mainly due to the high cost of transport in the government steamers along the Brahmaputra, leading to the Ganges and the Nadia rivers—estimated to be five rupees each log, and yet this was the cheapest and the quickest transport available in those days between Calcutta and Assam.⁵⁷ The cost of conveyance of logs of timber between Calcutta and Chittagong by the indigenous balam boats—the means of conveyance in common use for the distance involved was one rupee each.⁵⁸ This, when added to the actual cost of timber as quoted in the district, varying from one rupee to four rupees⁵⁹, resulted in most cases in a very high price for it when landed in Calcutta, obviously higher than that at which creosoted sleepers could be imported from England. The cost of timber from the forests of Bhagalpur and Monghyr was to amount in Calcutta to eight rupees⁶⁰ and Rs. 6-8-0⁶¹ each, respectively. This included the high cost of transport along the Ganges, which was estimated in the case of the Monghyr timber, at four rupees each log.⁶² Timber could be supplied to the railway works at the Raniganj end of the experimental line from the Bihar district of the Patna division. But, the cost to be incurred was not less than Rs. 5-8-0 each since the price of each log was two rupees in the forests and the cost of carting them to Sherghati on the Grand Trunk Road, not very far from Raniganj, was estimated

57. J. N. Martin, Executive Officer, Lower Assam, to Colonel F. Jenkins, Commissioner of Revenue, Assam, 31 May 1852, Rly. Letts. Encl., Vol. VI.

58. G. Plowden, Commissioner of Revenue, Chittagong, to Board of Revenue, 11 August 1852, Rly. Letts. Encl., Vol. VI.

59. *Ibid.*

60. G. T. Brown, Commissioner of Bhagalpur, to the Sec. to the Board of Revenue, Lower Provinces, 7 August 1852, para 2, *Ibid.*

61. G. Gough, Commissioner of Patna, to the Board Revenue, Lower Provinces, 27 July, 1852, *Ibid.*

62. *Ibid.*

to be Rs. 3-8-0 each.⁶³ Extensive forests were known to exist in Rāngpur, Patna, Murshidabad, Birbhum, Bogra and Rajshahi districts of the Rajshahi division ;⁶⁴ the Champaran district in the Patna division ;⁶⁵ Dinagepur and Malda districts in the Bhagalpur division⁶⁶ and on the Bhutan frontier.⁶⁷ Apart from the questions of quantity and quality available which were not satisfactory in all cases, the transport problem remained a constant factor due to which the use of timber from these sources was neither possible nor practicable. The same was the position as regards the forests along the western coast of Bengal, Sal forests in Midnapur, and further southward, in Cuttack in Orissa.⁶⁸

However, in spite of all these difficulties, the construction of the experimental line was accomplished in due time. By February 1855, the whole line was open to traffic. The completion of the line within the scheduled time, i.e., roughly about four years, in spite of the fact that labour, machinery and materials for their most part, had to be taken from England was highly appreciated by the authorities.⁶⁹ But, such was not the case with the extension line to Delhi and we now proceed to describe that part of the story.

The contract for the extension line to Delhi was concluded, as we have seen, in February 1854.⁷⁰ The total stretch of the line was nearly 1000 miles.⁷¹ The earlier plan was that the

63. Gough to the Board of Revenue, Lower Provinces, 27 July 1852, Rly. Letts. Encl., Vol. VI.

64. Officiating Commissioner of Revenue, Rajshahi division, to the Board of Revenue, Lower Provinces, 16 July 1852, *Ibid.*

65. Gough to the Board of Revenue, Lower Provinces, 29 July 1852, *Ibid.*

66. Brown to the Sec. to the Board of Revenue, Lower Provinces, 7 August 1852, *Ibid.*

67. Officiating Commissioner of Revenue, Rajshahi division, to the Board of Revenue, 16 July 1852, *Ibid.*

68. Report of the Military Board, 28 Oct. 1853, Beng. Rly. Cons., 29 Dec. 1853, No. 52, Range 163, Vol. XVII.

69. Minutes of Evidence taken before the Parl. Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 260, Q. 3688.

70. *Supra*, Chap. I, p. 14.

71. *Ibid.* pp. 13-14.

work of construction should be started all along the line simultaneously⁷² so that it could be completed within the following seven years.⁷³ But, that this was not practicable was realised soon. The provision of materials, specially of the iron-work for this extensive line presented itself as an insurmountable problem. As the line extended towards the Upper Provinces of India, the provision of sleepers from the local sources was increasingly becoming a practical proposition. This was because of the line being brought within the closer proximity with the Sal forests of the Himalayan base as a result of which, the hazards and expenses of a larger river traffic for the timber could be eliminated. Since the end of 1855, it became possible to supply a large number of sleepers from the forest department of the Government of the N. W. Provinces.⁷⁴ Supplies by private parties began even earlier.⁷⁵ But, as far as the iron-works were concerned, there was no other way but to depend on England for the entire quantity, estimated in 1853 at 231,593 tons.⁷⁶ But, these were the years of gold rush, which resulted in the diversion of a large amount of English shipping from their normal routes of commerce to India, to the gold-producing countries of Australia and California,⁷⁷ and the yearly amount of shipping necessary to bring this large quantity of iron-work to Calcutta to enable the line to be completed within the stipulated seven years, was by no means available.⁷⁸ Apart from this freight problem, the position of the iron-market in England was not very favourable either. Due

72. Fin. (Rly) Des. to, 21 Dec. 1852, No. 67, Rly. Des. Beng. Ind., Vol. I, p. 225.

73. Road to Melvill, 26 July 1854, *Parl. Pap.*, (H.C.). 1854, XLVIII, (418), p. 12.

74. Fin. (Rly)) Des. to 17 Dec. 1856, No. 40, Rly. Des. Beng. Ind., Vol. II, p. 344.

75. See, for instance, L. Stokes and A. Boyle, Acting Agents of the E.I. Rly. Co., to Baker, 4 Dec. 1856, Rly. Letts. Encl., Vol. XV.

76. Extract from Baker's Memorandum, 16 Dec. 1853, para 9, Rly. Letts. Encl., Vol. IX.

77. T. Oldham, Superintendent, the Geological Survey of India to W. G. Young, Offcg. Und. Sec. to Govt. of Bengal, 1 August 1853, Rly. Letts. Encl., Vol. VIII.

78. Extract from Baker's Memorandum, 16 Dec. 1853, para 10, Rly. Letts. Encl., Vol. IX.

to the simultaneous demands of the home and foreign railways, the price of iron in England was on the increase.⁷⁹ With reference to this state of affairs, Baker wrote in December 1853, ".....I would venture to express a confident expectation that whatever agency be employed there will be no difficulty in completing the works within the stipulated seven years, provided the materials, stock and machinery, for which we are necessarily dependent on England can be supplied in proper time. In this, however, appears to me to lie the chief difficulty of the undertaking".⁸⁰

The only practicable line of action under the circumstances was stated in the despatch of the Court of Directors dated 5 July 1854. They wrote, ".....it would be desirable to require the completion of such portions of the line first as might be opened with the greatest advantage to the public, and to the Railway Company. To these sections the materials which first arrive might be appropriated, so that, in the event of the time for completing the whole line being unavoidably extended, the most important parts may be finished and opened as soon as circumstances would permit".⁸¹ The construction of the section from the experimental line to Rajmahal on the Ganges had already been decided by 1852.⁸² George Sibley, the Railway Company's Engineer, remained in charge of the construction of the portion from near Burdwan to the river Mor and the other portion of the section was to be constructed by Messrs Nelson and Co., the contractors.⁸³ Now, another section in the Upper Provinces, from Allahabad to the left bank of the Jumna, opposite Agra, with a branch from the main line to the latter place, was approved for the immediate commencement of operations.⁸⁴ The parties contracted for this section were

79. Fin. (Rly) Des. to, 8 Feb. 1854, No. 2, Rly. Des. Beng. Ind., Vol. II, pp. 7-8.

80. Extract from Baker's Memorandum, 16 Dec. 1853, para 9, Rly. Letts. Encl., Vol. IX.

81. Fin. (Rly) Des. to, 5 July 1854, No. 10, Rly. Des. Beng. Ind., Vol. II, p. 30.

82. Fin. (Rly) Des. to, 21 Dec. 1852, No. 67, Rly. Des. Beng. Ind., Vol. I, p. 223.

83. Davidson, *op. cit.*, p. 160.

84. Baker's Memorandum, 15 Sept. 1854, Paras 1-4, Rly. Letts. Encl., Vol. XI.

Messrs. Norris and Co. and Messrs. Brandon and Co., the former for the portion of the line in Allahabad district⁸⁵ and the latter for that in the Cawnpore district.⁸⁶ The remaining portion from Shekoabad to Agra remained from the very beginning in charge of the Railway Company's engineers.⁸⁷ But, excepting the Morris and Co. in the Allahabad district, all other contractors for both these sections failed to complete the works entrusted to them and these had ultimately to be completed by the Railway Company's engineers.⁸⁸ Both these sections, i.e., the Rajmahal section in the Lower Provinces⁸⁹ and the Allahabad-Agra section in the Upper Provinces⁹⁰ were expected to be completed by 1857.

There were reasons which justified the decision in favour of the construction of these two particular sections of the line before the others. It was obvious, however, that these two sections, with a gap of several hundreds of miles between them, would not be of much use for the through traffic between the Lower and Upper Provinces of India. The probability was that this traffic, in order to avoid the risk, trouble and expense of reshipment both at Allahabad and Rajmahal, would continue to pass by the old Ganges route. Bourne commented in 1848, ".....it is doubtful whether a railway, extending from Calcutta to Rajmahal, would become the medium for the transmission of any material proportion of the Ganges trade ; for though the shoals of the Bhagarutty and the sinuous channels of the Sunderbunds would be avoided by the use of such a railway, yet a transhipment of merchandise would be the inevitable concomitant of the proposed mode of transport, and experience has shown that transhipment is a greater evil than any of the ordinary impediments of navigation".⁹¹ But, even

85. Davidson, *op. cit.*, p. 160.

86. *Ibid*, p. 196.

87. *Ibid*, p. 198.

88. *Ibid*, p. 161.

89. Fin. (Rly) Des. to, 4 Nov. 1857, No. 54, Rly. Des. Beng. Ind., Vol. II, p. 216.

90. Baker's Memorandum, 15 Sept. 1854, para 2, Rly. Letts. Encl., Vol. XI.

91. Bourne, *Railways in India*, *op. cit.*, p. 2. Bourne refers to the Glasgow and Greenock, Dublin and Kingston, and London and Blackwell railways in England which, on their opening, were expected

leaving out the question of this through traffic, the sections projected were to be greatly beneficial to the local traffic of the areas through which these passed. The districts of Birbhum and Rajmahal, to be served by the Rajmahal section, had an extensive export and import trade with Calcutta. Allahabad was an important commercial centre of the Upper Provinces and obviously, an extensive commercial traffic used to pass between that city and the fertile districts of Cawnpore, Etawah, etc., in the Upper Doab. In view of the hazards and expenses involved in the river traffic available in the areas to be served by both these sections, there was every reason to expect that the existing local traffic would revert to the railways opened. We have already referred to the difficulties attending the journey along the Nadia rivers, the principal means of communication available to Birbhum and Rajmahal districts for their traffic to and from Calcutta. The navigation along the Ganges and the Jumna above Allahabad, was equally uncertain and limited, these rivers being too shallow there and Allahabad was practically the terminus of the water transport towards Upper Provinces.⁹²

But, both these sections had peculiar problems of their own as regards the provision of materials and this hampered the progress of works on them to a considerable extent. In the Rajmahal Section, the greatest problem was that of securing bricks. The line involved the construction of numerous bridges and culverts. These never proved to be very great problems from engineering points of view. But, the difficulty arose from the decision to build both the sub-structures and super-structures of these bridges, big and small, in brick. The rising price of iron in England and also the difficulty to secure freight in the India-bound vessels were the reasons why this decision was taken. It was expected that brick could be secured from the

to absorb the traffic carried to some convenient points on them by ships along the Clyde, the Liffey and the Thames, respectively. But, this expectation was not fulfilled in a single instance. c.f. Bourne, *Railways of India, op. cit.*, pp. 2-3. See also Chap. VI.

92. John Hodgson, Chief Loco. Suptdt. of E.I. Rly. Co. to W. W. Greathead, Dy. Constg. Engr. to the Govt. of India, Rly. Dept., 10 March 1855, para 2, Rly. Letts. Encl., Vol. X.

local sources at a cheaper rate.⁹³ The total amount of brick-work involved in the line was thus immense—the South Birbhum district alone having more than 5,000,000 cubic feet of brick-work.⁹⁴ There is no doubt that it was an error of judgment to have made such a decision. Brick-making was entirely a manual process in India in those days. The entire operations, including the burning of bricks used to be carried on in open-air and so, the large-scale production was possible only during the dry and preferably hot months. Besides, the whole procedure involved many uncertainties. For instance, bricks put into the kiln for burning purposes, might not turn out to be true and fit for use. It was usual to reject many of them, because, from the unsuitability of the clay, lack of skill on the part of the labour employed, or the inability on the part of the makers to adjust the heat, these turned out to be brittle, of bad shape, and either over-burnt or insufficiently burned. These difficulties on the face of them may not seem to be very serious ones, and actually they were not of such a character as to make brick-making itself a very difficult process. As it was pointed out by Noad,⁹⁵ the difficulty lay in the low output due to the factors which we have mentioned above, the maximum annual output upon any given fifty miles of the line being about 800,000 cubic feet—a small figure in relation to the vast needs arising out of the railway demand which had to be met within a limited period of time.

In fact, the supply of bricks failed in all parts of the line. The catastrophe was of least dimensions in the South Birbhum district due to the extraordinary exertion and management by George Sibley, the engineer in charge of the construction of the line there.⁹⁶ But, even there, the position became really precarious about the beginning of 1857 in the works between Bur-

93. Minutes of Evidence taken before the Parl. Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 42. Q. 622.

94. Turnbull to E. Palmer, Agent to E.I. Rly. Co., 3 July 1857, Rly. Letts. Encl., Vol. XVI.

95. Minutes of Evidence taken before the Parl. Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 64, Q. 1016.

96. Turnbull to Palmer, 3 July 1851, para 11, Rly. Letts. Encl., Vol. XVI.

dwan Junction and the river Ajay.⁹⁷ In the North Birbhum district, the output of the year 1856 proved to be very bad and many of the bricks were found to be unfit for use.⁹⁸ The position became most critical in the Rajmahal district. In 1857, which was supposed to be the year of the completion of the entire line, about 4,700,000 cubic feet of brick-work had still to be begun and completed on the 50 mile stretch of the line in the middle and southern portions of the district.⁹⁹ According to the usual rate of progress in such works, this was estimated to take about another six years.¹⁰⁰ In this district, the refusal of the Santals, the local inhabitants, to work on the railway¹⁰¹ rendered the procurement of labour extremely difficult and this made the position worse.¹⁰² The whole affair revealed a complete mismanagement on the part of the railway engineers who designed the plans, and also of the Government officials who approved them. It also shows lack of proper supervision on the part of both these parties since they failed to perceive the true nature of the crisis sufficiently before-hand.

However, this was the troubled year of 1857 when the outbreak of the Sepoy Mutiny created disorder throughout the northern part of India and the importance of a through railway line from Calcutta to some point on the Ganges specially in respect of the transport of troops was all the more felt.¹⁰³ All the insistence was on the quick completion of the works. A. M. Rendel, the Railway Company's chief engineer in London, paid a visit to India to inspect the state of works on the line and to suggest a remedy for the situation.¹⁰⁴ On his suggestion, the use

97. Report of W. A. Crommelin, Dy. Constg. Engr. to Govt. of India, 12 Feb. 1857, Rly. Letts. Encl., Vol. XVI.

98. Crommelin's Report, 25 Feb. 1857, Rly. Letts. Encl., Vol. XVIII.

99. Turnbull to Palmer, 3 July 1857, para 9, Rly. Letts. Encl., Vol. XVI.

100. *Ibid.*, para 12.

101. This was due to a widespread disturbance in the area an episode known as the Santal Rebellion of 1855, c.f. *Report of the Deccan Riots Commission*, 1975, p. 7.

102. Davidson, *op. cit.*, p. 166.

103. Fin. (Rly) Des. to, 9 Dec. 1857, No. 60, Rly. Des. Beng. Ind., Vol. II, pp. 239-241.

104. *Ibid.*, pp. 239-241.

of iron girders for all the large bridges in the line between the river Mor and Rajmahal was decided in 1853.¹⁰⁵ The position regarding the supply of bricks in the line between Burdwan and the river Mor was regarded as not so unsatisfactory and the line was expected to be ready in good time.¹⁰⁶ The benefits arising out of the speedy opening of the line and decreasing establishment cost caused by it, were regarded as off-setting the increased outlay involved in the use of iron girders.¹⁰⁷ The portion of the line between Burdwan Junction and the river Ajay, 23 miles, was opened on 1 October 1858, and that between the river Ajay and Sainthia, 24 miles, on 28 August 1859.¹⁰⁸ But, it was not until as late as October 1860 that the line to Rajmahal was opened.¹⁰⁹

The work of construction on the section in the N. W. Provinces from Allahabad upward to Agra, began about the same time as that on the Rajmahal section. The greatest obstacle to the rapid progress of works on this line was the conveyance of the heavy iron-work, i.e., rails, machinery, engines, etc., from Calcutta. The only way by which these iron-works could be conveyed to the respective points on the line was to load them in country boats along the Ganges. The freight in steamships plying that river was high and the accommodation in them was too limited for the vast amount to be carried. However, there was to some extent mismanagement on the part of the contractors engaged for the purpose and also a lack of supervision on the part of the Railway Company's engineers.¹¹⁰ But, it was the

105. Note by A. G. Goodwyn, Constg. Engr. to Govt. of India, Rly. Letts. Encl., Vol. XVII.

106. *Ibid.*

107. R. Strachey, Offcg. Sec. to Govt. of India, to Goodwyn, 16 April 1858, para 3, Rly. Letts. Encl., Vol. XVII.

108. Report to the Sec. of State for India in Council. on Rlys in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (C. 2669), p. 10.

109. Report to the Sec. of State for India in Council. on Rlys in India for 1860-61, *Parl. Pap.*, (H.C.), 1861, XLIII, (C. 2826), p. 5.

110. Report of the Committee appointed to enquire into the working of arrangements for the inland transport of the permanent way materials, presided over by Crommelin, 31 Dec. 1856, para 2, Rly. Letts. Encl., Vol. XVI.

usual difficulty of the navigation along the Nadia rivers and the Ganges, which reacted most adversely on these transport operations. The firm with which the contract was first made was Robello and Co. Regular transport of materials began from the end of 1854 and up to March 1855, the Robello and Co. delivered at Allahabad about 2,150 tons though during the period the quantity they sent was 3,060 tons.¹¹¹ About the middle of the year 1855, a fresh contract was made with Messrs. Durrschmidt, Grob and Co. This firm had much experience in the Ganges traffic, and had numerous agencies along the river.¹¹² The quantity they sent was large. From 9 July 1855 to 30 April 1857, 65,624 tons were despatched by this firm from Calcutta. But, the quantity arriving at Allahabad during the same period was only 21,579 tons.¹¹³ It had always been the case that a large part of the goods sent from Calcutta was held up in the river due to some such circumstances as the boats running aground or being overtaken by storms. The experiences of Messrs Durrschmidt and Co. in this respect may be referred to here. From the end of June to the end of November during the year 1855, this firm sent about 19,000 tons of iron-work in country boats through the usual routes of the Bhagirathi and the Mathabanga rivers.¹¹⁴ By a sudden fall of the Nadia rivers, all the boats despatched during the months of September, October and November, stuck fast in those rivers and had to be either partially or wholly unladen and about 10,000 tons had to be re-shipped.¹¹⁵ A large number of boats, again, which had crossed these rivers by September, were involved in violent storms in between Rampur Boalia and Benares and wrecked. Meantime, many of the boatmen were attacked with cholera which

111. Report of the Committee appointed to enquire into the working of arrangements for the inland transport of the permanent way materials, presided over by Crommelin, 31 Dec. 1856, para 3. Rly. Letts. Encl., Vol. XVI.

112. Baker's Report, 15 May 1855, Rly. Letts. Encl., Vol. XVI.

113. H. L. Christians, Transport Suptdt., E.I. Rly. Co., to L. Stokes and A. Boyle, Acting Agents, E.I. Rly. Co., 3 June 1857, *ibid.*

114. Messrs. Durrschmidt, Grob & Co. to Crommelin and D. M. Roche, Traffic Manager, E.I. Rly. Co., 24 Dec. 1856, *ibid.*

115. *Ibid.*

was raging in the neighbouring areas on the subsidence of floods.¹¹⁶

A precarious position thus emerged regarding the supply of the iron-work at Allahabad. In October 1856, with only one year still left within which the entire line, more than 200 miles,¹¹⁷ was to be completed, the arrival of only 5,435 tons of rails was reported at Allahabad, which was sufficient for only 41 miles of single line without sidings,¹¹⁸ and it was calculated that it had taken sixteen months to deliver this quantity.¹¹⁹ Another 30,000 tons were still on the river between Calcutta and Allahabad.¹²⁰ In October 1857, it was calculated from the rate at which goods were delivered by the Durr Schmidt and Co. in the months of January and February, 1857, and also in the month of December, 1856, that another sixteen months from the former date would elapse before the whole amount of goods despatched by this time would reach their destination.¹²¹

However, as in the Rajmahal section, in the Allahabad-Agra section as well, the work of construction could not keep up to the schedule. Though the line from Allahabad to Cawnpore was worked temporarily for the government purposes during 1857,¹²² the entire line from Allahabad to Agra was not opened before 1862.¹²³

Meantime, operations were commenced all over the major portions of the line by the year 1856. The sections in the Lower Provinces were (1) from Colgong near Rajmahal through Bhagalpur and Manghyr to Pirpanti, 80 miles ; (2) from Pirpanti, crossing the large rivers, Keul, Hullohur and Pun Pun, through the city of Patna to Phulwari, 85 miles ; and (3) from

116. Messrs. Durr Schmidt, Grob & Co. to Crommelin and D M Roche, Traffic Manager, E.I. Rly. Co., 24 Dec. 1856, Rly. Letts. Encl., Vol. XVI.

117. Davidson, *op. cit.*, pp. 195-197.

118. Greathed to Baker, 28 Oct. 1856, para 3. Rly. Letts. Encl., Vol XVI.

119. *Ibid.*, para 6.

120. *Ibid.*, para 9.

121. Fin. (Rly) Des. to, 5 May 1858, No. 16, Rly. Des. Beng. Ind., Vol. II, p. 298.

122. Report to the Sec. of State for India in Counc. on Rlys in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (2669), p. 10.

123. Davidson, *op. cit.*, p. 199.

Phulwari to the west side of the river Karmanasa.¹²⁴ These sections were initially placed into the hands of the following contractors respectively, Messrs. Macintosh and Co., Messrs. Ward and Co., and Messrs. Burn and Co.¹²⁵ But, with the exception of the latter, all other contractors failed to complete their works and the Railway Company themselves had to take over the work of construction into their hands.¹²⁶ The sections begun in the N. W. Provinces were those in Benares and Mirzapore districts below Allahabad. The former section was constructed by Messrs. Burn and Co. and the latter, by Messrs. Hunt and Co.¹²⁷ In the Delhi district, the last section in the whole length of the line from Howrah to Delhi, the construction started about the year 1860 by the engineers of the Railway Company.¹²⁸

In these sections in the Lower and the Upper Provinces, the problems in relation to the provision of materials were the same as those on the limited sections begun in 1854, namely, the Rajmahal section in the Lower Provinces and the Allahabad-Agra section in the Upper Provinces. But, as can be easily imagined from the greater volume of works undertaken, the problems were of far greater dimensions. In 1858, Noad commented that in the Upper Provinces, the forwarding of the iron-work up the Ganges would constitute the key to the period when the railway line there would be opened while in the province of Bengal, it was the question of brick-work.¹²⁹ That this was really the position in respect of these sections, we would try to establish in the following pages.

The amount of brick-work involved in the sections undertaken was immense. Practically, in taking the line along the Ganges rather than in a direct route to Mirzapore,¹³⁰ the main difficulty faced was the work of bridging the rivers. Major Kennedy,

124. Turnbull's Report, 6 March 1856, paras 28, 14 and 2 respectively, Rly. Letts. Encl., Vol. XIV.

125. *Ibid.*

126. Davidson, *op. cit.*, pp. 160-161.

127. *Ibid.*, p. 161.

128. *Ibid.*, pp. 200-201.

129. Minutes of Evidence taken before the Parl. Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 37, Q. 521.

130. *Supra*, Chap. III, pp. 81-87.

though recommending the line in all other respects, described the rivers lying in its course, as the chief impediment to the progress of the work of construction.¹³¹ Danvers criticised the entire line to Delhi in the following terms—"The most formidable obstacles which occur in the course of the line are the rivers, the chief being the Soane, and the Jumna. The others are the Adjai, More, Keeul, Hullohur and Tonse".¹³² Noad stated in 1858—".....whole question [of the measure of time for the completion of the whole line] resolves itself into the rapidity with which we can construct the enormous number of heavy bridges and flood arches along the Ganges Valley Line.¹³³ Many of these rivers lay in the portion under discussion, namely, the Keul, the Hullohur, the Son and numerous others big and small. The superstructures of these bridges were to be of iron girders imported from England. But even then, the brick-work involved in their sub-structures and also in the smaller bridges, viaducts and flood-arches was extensive. As for instance, in the Son district, the substructure of the bridge over the river Son alone needed 18,46,324 cubic feet of brick-work.¹³⁴ The other important brick-works were in the bridges over the Karmanasa, the Thoranadi, the Bynsa and Bunas nadis, and also in a series of flood-arches at various intervals.¹³⁵

Now, all along the line, the difficulty experienced in procuring bricks remained a constant factor impeding the progress of works. The difficulty was to a great extent due to the scarcity of brick-makers throughout the period. The great demand created by the railway works led to a great shortage of professional

131. Minutes of Evidence taken before the Parl. Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 135, Q. 2011.

132. Report to the Sec. of State for India in Counc. on Rlys in India, to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (2669), p. 9.

133. Minutes of Evidence taken before the Parl. Sel. Com. on East India (Rlys), 1858, *Parl. Pap.*, (H.C.), 1857-58, XIV, (416), p. 34, Q. 475.

134. Estimated quantities of brick-work in the proposed bridge over the Soane by Turnbull 31 Dec. 1855, Rly. Letts. Encl., Vol. XIII.

135. Turnbull's Report, 6 March 1856, para 2, Rly. Letts. Encl., Vol. XIV.

brick-makers.¹³⁶ Even by recruiting ordinary available labour,¹³⁷ and employing the Railway Company's engineers for the purpose,¹³⁸ these needs could hardly be met. Besides, there were some specifically local difficulties—the lack of fuel for the burning of bricks in some places ; at others, the unsuitability of the clay available. In the Son district, for instance, the Burn and Co., the contractors, commenced brick-making on a large scale immediately after they received the notice of the work. But, in spite of their best attempts, at the Karmanasa, the Thora Nadi and several other places, serious failure in brick-making took place due mainly to the unsuitability of the clay. The quantity of brick obtained was found to be insufficient to commence works before the rainy season of the year 1856 as was originally planned.¹³⁹ By procurement of clay from a great distance and also by erecting a brick-making machine at the river Karmanasa, some success was achieved in the brick-making here and that as late as the cold season of 1856-57.¹⁴⁰ Next to Son, there was the Patna district which contained three large bridges over the rivers Hullohur, Keul and Pun Pun and numerous flood arches and viaducts.¹⁴¹ Brick-making here was seriously affected because of the difficulty of securing brick-makers and brick-layers.¹⁴² In the Hullohur Valley, a series of long viaducts were designed entirely in brick and because of the immense brick-work involved in them, the area was described to be the key to the period of opening nearly the whole of the railway line within the limits of the Bengal Government.¹⁴³ Towards the end of 1858, serious dearth of fuel for burning bricks was reported in this area. Fire-wood was scarce and the Karharbari coal-field, being 50 miles away and the mining operations be-

136. Turnbull's Report, 6 March 1856, para 6, Rly. Latts. Encl., Vol. XIV.

137. *Ibid.*

138. Crommelin's Report, 25 Feb. 1857, Rly. Letts. Encl., Vol. XVIII.

139. Turnbull's Report, 6 March 1856, para 3, Rly. Letts. Encl., Vol. XIV.

140. Turnbull to Palmer, 6 April, 1858, Rly. Letts. Encl., Vol. XVII.

141. Turnbull's Report, 6 March 1856, para 14, Rly. Letts. Encl., Vol. XIV.

142. *Ibid.*, para 27.

143. Goodwyn's Report, 12 June 1858, Rly. Letts. Encl., Vol. XVII.

ing very limited there, was not of much help.¹⁴⁴ While the quantity of bricks required to be burnt was not less than 200,000,000 in 1858, i.e., nearly two years since these works commenced, only 5,000,000 had been burnt.¹⁴⁵ This was also the condition in the next district, i.e., from Pirpainti to Colgong. A large amount of bricks was needed for bridging work over the Ghooghat river, the Geroah, the Chumpun and the Khoah rivers and also for the Monghyr tunnel.¹⁴⁶ Due to the usual difficulties attending the process of brick-making, no brick-work could be commenced in this district even until March 1856.¹⁴⁷ The contractors for the line, Messrs. Macintosh and Co. were, again, new on the railway works, and the bricks made under their supervision, were of an inferior kind and the entire lot, which was rather a large amount, was rejected.¹⁴⁸

The remedy suggested for this state of affairs was the same as that on the portion between Burdwan Junction and Rajmahal. In 1858, on Turnbull's suggestion, the adoption of the imported iron girders even for the smaller bridges was decided on. The ground on which this decision was made was the same as in the case of the Rajmahal section. The extra cost involved was sanctioned in view of the quicker completion of the works.¹⁴⁹ By 1863, the line was opened all the way from Howrah to Benares.¹⁵⁰

In the Upper Provinces, the conveyance of the permanent way materials became an increasingly difficult problem along with the commencement of works in districts other than Allahabad, Cawnpore and Etawah, where operations had commenced in 1854. In April 1854, Palmer showed that exclusive of turntables, signal switches, crossings, etc., 100,404 tons of

144. Greathed's note on the Hullohur Valley Works, 9 Nov. 1858, para 2, Rly. Letts. Encl., Vol. XIX.

145. *Ibid.*

146. Turnbull's Report, 6 March 1856, para 34, Rly. Letts. Encl., Vol. XIV.

147. *Ibid.*, para 30.

148. *Ibid.*, para 28.

149. As referred to in Goodwyn's Note, 2 July 1858, Rly. Letts. Encl., Vol. XVII.

150. Rep. to the Sec. of State for India in Council on Rlys in India for 1862-63, *Parl. Pap.*, (H.C.), 1863, XLIII, (3168), p. 11.

rails, 27,000 tons of chairs, 1,238 tons of keys, 726 tons of pins, 6,003 tons of fish-plates and 890 tons of bolts and nuts, etc., still remained to be conveyed up the Ganges and that half of this quantity was to be carried over the entire distance to Allahabad.¹⁵¹ It was being increasingly felt that the existing arrangements, i.e., country boats, were completely inadequate to carry this immense quantity of iron-work to Upper India within a reasonable period of time. The Railway Company suggested in 1858 the construction in Calcutta of two iron loco steamers, eight iron flats of 200 tons each, and 50 sailing flats of iron or wood.¹⁵² They also demanded the importation from England of eight steamers and eight flats for use with the steamers and 50 sailing boats.¹⁵³ They also proposed to undertake the transport operations into their own hands.¹⁵⁴ These proposals of the Railway Company were immediately approved by the Government authorities who did not fail to see the urgency of the situation. In support of these proposals, Strachey, then officiating secretary to the Government of India, wrote—"... Railway property to the value of $\frac{1}{4}$ of a million sterling is lying no one knows where between Calcutta and Allahabad on the banks or at the bottom as may be. Things have been getting worse instead of better and the present proposal of the Agent seems to be the only practicable way out of the difficulty".¹⁵⁵

But, in spite of all these measures, conditions in respect of the transport of the railway materials to Upper India did not improve very much. Even in 1860, the whole arrangement as regards the transport of the railway materials to Upper India was described to be "one great and expensive failure."¹⁵⁶ Various discrepancies were brought to light in the way the accounts were kept, and the goods were sent from England and stored in Calcutta.¹⁵⁷

151. Palmer to Goodwyn, 16 April 1858, Rly. Letts. Encl., Vol. XVII.

152. *Ibid.*

153. Strachey's Note, 20 April 1858, *Ibid.*

154. Palmer to Goodwyn, 16 April, 1858, *Ibid.*

155. Strachey's Note, 20 April 1858, *Ibid.*

156. J. P. Beadle, Constg. Engr. to Govt. of Bengal, 14 Dec. 1860, Rly. Letts. Encl., Vol. XXI, p. 4.

157. Report on the Management and Accounts of the Store Dept. of the E.I. Rly. Co., by Captain Hyde, Dy. Constg. Engr. to Govt. of Bengal, 10 Nov. 1860, *Ibid.*, pp. 2-3.

It was not before 1865 that the entire distance from Calcutta to Delhi was traversed by the E.I.R.¹⁵⁸ Throughout the period that the work of construction was going on in the Upper Provinces, the transport of materials remained a serious problem which, it was even apprehended once,¹⁵⁹ would arrest the entire progress of works in these areas.

The construction of the Jubbulpore section was commenced in 1862¹⁶⁰ and that of the chord line in 1865-66.¹⁶¹ By this time, railways were no longer a novelty in India. Extensive stretches of railways were already in operation in the neighbourhood of both these lines. The chord line was the extension of the Raniganj branch of the line, which operating for the past few years, must have been of great help in respect of the most difficult aspect of the construction work, namely, the transport of the permanent way materials landed in Calcutta. This was also true of the Jubbulpore section, which, commenced in 1862, could avail of the services of the main line of the E.I.R. then opened for a considerable part of it from Calcutta towards the Upper Provinces.

In describing the work of construction of the E.I.R. with reference to the particular problem of the provision of materials needed for it, we come across a particular point related to this problem, namely, the loss of materials suffered by this railway during the Sepoy Mutiny of 1857 and this is the last point that we intend to refer to in this chapter. When the Mutiny broke out, the work of construction was going on on the major portion of the main line, and the progress of works on

158. Rep. to the Sec. of State for India in Council on Rlys. in India for 1865-66, *Parl. Pap.*, (H.C.), 1866, LII, (3696), p. 3. The line was carried in this year to the left bank of the Jumna at Delhi, *ibid.* The bridge over that river which gave this railway access to that city was opened in 1866-67, c.f. Rep. to the Sec. of State for India in Council on Rlys. in India for 1866-67, *Parl. Pap.*, (H.C.), 1867, L, (3856), p. 26.

159. Christiana to Stokes and Boyle, 3 June 1857, Rly. Letts. Encl., Vol. XVI.

160. Rep. to the Sec. of State for India in Council on Rlys. in India for 1861-62, *Parl. Pap.*, (H.C.), 1862, XL, (3009), p. 3.

161. Rep. to the Sec. of State for India in Council on Rlys. in India for 1865-66, *Parl. Pap.*, (H.C.), 1866, LII, (3696), p. 4.

this line was affected by it in more than one way.¹⁶² Of all the effects of this outbreak on the construction of this line, the most apparent was the wanton destruction of the materials belonging to the Railway. Railways being one of the innovations in India about this time to which the causes of this outbreak are sometimes traced back, it is not entirely unreasonable to assume that these were special targets of attack by the people in revolt. These feelings must have been stronger in Bihar and the N. W. Provinces where the railway had not yet started to function and it is notable that the destruction of the railway property during this outbreak was almost limited to the unfinished portions of the line in those two areas.

In Bihar, the portion most affected lay in the Son district. All the preliminary works, plant, fuel and materials provided for the piers of the Son bridge were destroyed by rebellious people from Dinapore.¹⁶³ The destruction effected here was described to have thrown back the ultimate completion of this work at least by one year.¹⁶⁴ The same Dinapore mutineers destroyed valuable railway property in the Arrah district to the west of the river Son.¹⁶⁵ Works were deserted temporarily over the greater portion of the line from Rajmahal to the river Son.¹⁶⁶

In the N. W. Provinces, the most serious damage was caused in the Allahabad district. The wood-work of 67 vehicles was completely burnt.¹⁶⁷ The iron-work for the waggons was almost entirely stolen.¹⁶⁸ The running shed, erecting shed, smiths' shop and stone-house were completely destroyed by fire ; all the tools of the tool shop were stolen.¹⁶⁹ Many of the

162. *Supra*, Chap II, p 35.

163. S. Power, Engr., E.I.R., to Turnbull, 7 August 1857, Rly. Letts. Encl., Vol. XVII.

164. Baker's Report, 11 August 1857, *ibid*.

165. Turnbull's Report, 21 August 1857, para 16, Rly. Letts. Encl., Vol. XVI.

166. *Ibid*, paras 8-9, 13 and 18.

167. P. D. Nichol, Acting Loco. Suptdt., Allahabad, to Palmer, 29 June 1857, Rly. Letts. Encl., Vol. XVI.

168. *Ibid*.

169. Reply of Nichol on the state of the engines at Allahabad, June 1857, Rly. Letts. Encl., Vol. XVI.

boats on the Ganges, carrying railway materials, were sunk, burnt and destroyed by the rebellious people.¹⁷⁰

The E.I.R. was the first line of railway to be built in the northern part of India and also the most important trunk line of railway in that area. The importance of the history of its construction lies in the fact that the whole enterprise was a novel one amidst various adverse circumstances—the principal one being the provision of materials. What seems striking here is that this problem, though a very serious one as we have seen, was never foreseen in the period when negotiations for railways in India were going on—a period when all sorts of apprehensions regarding the mechanical practicability and commercial profitability of railways in India were widespread.¹⁷¹ But, unforeseen though it was, it was faced with courage and determination by the Railway Company's engineers and officers, to whose credit should be ascribed the completion of this vast railway system in due course.

170. Thomas Byrne, Assist. Engr., E.I. Rly. Co., to Palmer, 3 July 1857, Rly. Latts. Encl., Vol. XVI.

171. *Supra*, Chap. II, pp. 18-21.

CHAPTER VI

EFFECTS

In this chapter, we would describe briefly the effects of the E.I.R. on the economic life of the Gangetic valley during the first twenty-four years of its operation there. The experimental portion of the line was opened in 1855 and this was followed by the successive openings of its other portions.¹ By 1879, which is the closing date for this book, thus, about a quarter of a century of its operation might be said to be over. During this period there were certain developments in the economic life of the Gangetic Valley which may be directly related to the operation of this railway there.

The importance of transport in the development and progress of human civilisation is now universally recognised. W. T. Jackman, though primarily devoted to the writing of the history of the development of transport in modern England, lays much stress on the relation of transport "to the progress of agriculture, the growth of markets, the advance of industry, the increase of wealth, and many other economic and social factors."² In the history of transportation, again, the invention of railways is a great land-mark. The speed, the comfort and the accommodation offered by the railways were something unknown in the pre-railway age and thus, the effects the railways had on various aspects of life in a country might be described as revolutionary when compared with those of all other existing means of communication.

Referring to the history of the development of communications in India, we find that railways came there at a time when transport in that country was in a most primitive state.³ Because of the lack of adequate communications, the country remained, so to speak, a conglomeration of so many isolated parts, each leading its own economic life based on a system only slightly more advanced than subsistence production. Railways, by offering the facilities necessary for an exchange eco-

onomy, made inter-dependence of various areas possible and the enlarged demand thus created, resulted in the development of local resources. Of course these developments in the economic life of India in the wake of the introduction of railways there should be viewed in this way only in a relative sense. The total mileage of railways opened in India even at the end of our period, was insignificant when compared to the vast expanse of the country and there was also the great need of the development of roads and river routes to act as feeders to the expanding railway net-work. Under these circumstances, the above-mentioned economic process of inter-dependence of areas resulting in specialisation could not be said to have been carried to any remarkable extent in our period. Besides, inter-dependence of areas and specialisation pre-suppose the exploitation of the productive capabilities of the respective areas to such a maximum extent so as to result in surplus production over and above the needs of local consumption. This, again, depends on the availability of several other pre-requisites in the form of sufficient capital, trained labour, improved machinery and so on. A high economic standard as a result of the proper development of all these factors is yet to be achieved in the present-day India. All that can be said here is that along with the commencement of railways, the whole process was accelerated. Railways, following which came also feeder roads and river-routes, started fulfilling the first requirement as mentioned above, namely, the means of exchange. Possibilities thus opened up led to the gradual development of other factors.⁴ In the following pages, we would note these developments in the areas directly served by the E.I.R.

The economic development in the Gangetic Valley, following the operation of the E.I.R. would be reviewed here under three major heads :—first, the growth of industries ; secondly, the developments in the sphere of agriculture ; and lastly, those in respect of trade.

The E.I.R. can be said to have stimulated to a considerable degree the industrial activities, in the modern sense, in the

areas it traversed. In fact, the first rudimentary beginning of modern machine-operated large-scale industries in India can be traced back to the commencement of railways in that country. The industrial potentialities of India were being increasingly recognised, no doubt. But, in the pre-railway age, when there was no trained labour, no improved machinery and no adequate means of exchange, the amount of money to be invested in such an enterprise had to be immense which had no chance of being commensurate with a profitable return. Naturally, there was no immediate impetus to the employment of capital in such projects. The Government had no initiative in the matter and this inactivity was not peculiar to this branch of administration as we have seen in an earlier chapter.⁵ Private capital from India was not forthcoming⁶ and private capital from abroad, in view of the conditions as described above, did not consider the prospects as favourable. The railways provided improved facilities of transport which made possible the collection of raw materials from a variety of sources and also the selling of finished products to a wider market. One of the basic pre-conditions for the growth of industries was thus fulfilled. Confining our attention to the Gangetic Valley, we find that the industry which made a rapid headway there during the period under discussion was the coal of the Burdwan area in Bengal. We would now try to establish the relation between the development of this coal-field and the operation of the E.I.R. in its vicinity and this will show that the latter was the most obvious factor in its development.

As we have seen in an earlier chapter, in the pre-railway age, the absence of a cheap and regular means of transport to the Calcutta market remained the chief obstacle to the proper development of the valuable resources of the Burdwan coal-field. In February 1855, the experimental line of the E.I.R. from Howrah, opposite Calcutta, to Raniganj in the coal district was opened to traffic.⁷ The railway offered itself as a much better substitute for the slow, hazardous and consequently, in its ultimate cost, expensive boat traffic along the Damodar. It facilitated, in the first instance, the transport of

5. *Supra*, Chap. III, p. 66.

6. *Supra*, Chap. II, pp. 43-46.

7. *Supra*, Chap. V, p. 123.

coal to the existing demand centre in Calcutta—demand arising there from the needs of the newly introduced steam vessels along the Ganges.⁸ At the same time, the railway paved the way for the emergence of new demand centres. Coal from the Burdwan mines, from now on, could be transported towards Calcutta in increasing quantities, and at a comparatively cheaper rate and in a much shorter period of time. This possibility of obtaining fuel cheaply acted as a direct impetus to the growth of the new industries in Calcutta and its neighbourhood. The manufacture of jute with the help of steam-driven engines was started at Rishra, near Serampore, lying along the route of the experimental line.⁹ But, it was the railway itself which was the greatest consumer during this period of the coal raised from the Burdwan coal-field. In the initial days of the railway construction in India, it was believed that coke was the only kind of fuel that could be used for locomotive purposes.¹⁰ Through successive experiments,¹¹ Indian coal was known to be very deficient in coking qualities and so, there was no other option but to depend on imported coke for use on the newly opened railways in India.¹² But, in the middle of the year 1855, the locomotive department of the E.I.R. succeeded in using Burdwan coal without coking it for their locomotive purposes.¹³ This suddenly created a very enlarged demand for this coal and with the work of construction going ahead on the extensions of the E.I.R. towards the Upper Provinces, the possibilities of this demand being far more enlarged were apparent. Apart from these locomotive purposes, the work of construction of the line itself involved certain processes such as brick-burning and so on, which needed a large amount of coal and the question of quality being not so important here, the Burdwan coal

8. *Supra*, Chap. III, p. 76.

9. V. Anstey, *The Economic Development of India*, (London, 4th ed. 1952), p. 279.

10. Turnbull to Baker, 25 June 1852, Rly. Letts. Encl., Vol. VI.

11. Experiments were made both in India and England in the early years of the railway construction in India; c.f.—Baker's memorandum on measures taken by the Railway Company for the supply of coke in India, 8 March 1854, *ibid*.

12. Turnbull to Baker, 25 June 1852, *Ibid*.

13. Fin. (Rly) Des. to, 17 Sept. 1856, No. 28, Rly. Des. Beng. Ind., Vol. II, p. 291.

was in use from the very beginning. In 1859, Oldham reported the carriage of cart-loads of coal from the Burdwan coal-field to the work-sites on the Rajmahal section of the railway.¹⁴

Under the impetus of these demands, emerging along with the operation of the railway in the area, the yearly out-put from the Burdwan coal-field was increasing steadily. In 1855, this was estimated to be 100,000 tons.¹⁵ But, in 1859, it rose to 325,000 tons approximately.¹⁶ There was steady increase in the coal traffic on the section of the railway opened. While in 1855, the receipts from the coal traffic on this line was £1949, in 1859, these rose to £ 71,736.¹⁷ Within these few years, the coal-field itself presented an altogether different sight. Referring in this, Oldham wrote in 1859—"I paid a hurried visit to this coal-field in 1851-52, soon after my first arrival in the country. At that time, there were scarcely half a dozen pits at work in the whole field. Nothing struck me with a greater surprise than the almost total neglect of so valuable and important a district. But, the scene has totally changed now. Every known locality where coal is, or has been seen, has been worked into. Quarries are seen in full work, where formerly nothing but bareness existed. And at the present time the great difficulty consists in procuring labour sufficient to meet the increased demands".¹⁸

The increasing supplies of Burdwan coal as noted above, had the most favourable effects on its price in relation to that of the imported coal. In 1852, the English coal was selling in the neighbourhood of Calcutta from 27s 9d a ton to 18s 8d a ton.¹⁹ During the same period, the price of Burdwan coal was quoted there as 20s 9d a ton.²⁰ From 1855, when the railway began

14. Report on Coal Resources and Production of India by T. Oldham, 1867, App. III, p. XXIV, *Sel. Govt. of India*, No. 64.

15. Rendel and Turnbull to Noad, 23 July 1855, Rly. Home Corrs., 'A', Vol. IX.

16. Report on Coal Resources and Production of India by T. Oldham, 1861, App. III, p. XXIV, *Sel. Govt. of India*, No. 64.

17. Report to the Sec. of State for India in Council on Rlys. in India to the end of 1859, *Parl. Pap.*, (H.C.), 1860, LII, (2669), p. 32.

18. Report on Coal Resources and Production of India by T. Oldham, 1867, App. III, p. XXIV, *Sel. Govt. of India*, No. 64.

19. Turnbull to Baker, 25 June 1852, Rly. Letts. Encl., Vol. VI.

20. *Ibid.*

to traverse the coal-field, a sharp reduction in the price of the latter was noticeable. In the absence of the necessary statistics,²¹ we cannot of course prove it in a straightforward manner and have to take recourse to some indirect method. Thus, in 1851, the price of the Burdwan coal was about one-third of that of imported English coke, the price of the former being Rs. 11 As. 3 per ton²² while that of the latter, Rs. 33 As. 12 per ton.²³ In 1855, the ratio between the prices of these two articles, i.e., Burdwan coal and imported English coke, became 1 to 6 respectively, if not more. We arrive at this conclusion by referring to the fuel cost on the E.I.R. in 1855. In the first half of that year, when English coke was in use as fuel on that railway, the fuel cost was quoted as As. 13 Pies 1½ per mile.²⁴ But, in the following December, as a result of the use of Burdwan coal, the fuel cost on the railway was reported to have reduced to As. 1 Pies 10½, i.e., about six times less than the cost quoted for the first half of the year.²⁵ Since there is no reason to assume any notable rise in the price of the English coke during this period,²⁶ the change in the ratio as indicated above might be said to have been mainly due to the reduction in the price of Burdwan coal.

In the sixties of the nineteenth century, there was further development of the Burdwan coal-field. There was, in the first instance, the expansion of railways in areas conveniently situa-

21. The statistical information about coal of India as a whole prior to the sixties of the nineteenth century is very limited. The materials used in Chap. III, pp. 133-137, may be mentioned as principal sources of such information, which do not throw much light on the various aspects of the question. It was in the early sixties that the first attempt was made at giving data, tolerably full and complete, regarding the actual amount of coal mined throughout India in general, and all other subsidiary questions relating to this industry. See Mineral Statistics, p. 1, *Memoirs of the Geological Survey of India*, Vol. III.

22. Turnbull to Noad, 30 June 1851, Rly. Letts. Encl., Vol. III.

23. *Ibid.*

24. Fin. (Rly) Des. to, 17 Sept. 1856, Rly. Des. Beng. Ind., Vol. II, p. 291.

25. *Ibid.*

26. The basis of our statement here is the Section on coal in McCulloch's *Commercial Dictionary* (London 1859), Vol. 1, pp. 295-304.

ted to make use of the coal from this coal-field. Certain industries also grew up in the vicinity which were increasingly using this coal. The market for it, thus, was gradually expanding. Assured of sure return, the E.I. Rly. Co., again, was extending its lines in the coal-field. The total effect of these two sets of circumstances was most beneficial to the development of this coal-field as was apparent in its increased annual yield through extended mining operations in the area. We would now trace these developments in greater detail.

In the middle of the year 1865, along with the completion of the Jumna bridge at Allahabad, the entire stretch of the main line of the E.I.R. from Howrah to the left bank of the Jumna at Delhi—more than 1000 miles—was open to the public.²⁷ Along with the opening of the different sections of this line, the consumption of Burdwan coal on the E.I.R. was on the increase, and the completion of the Jumna bridge as we have mentioned above, which enabled the E.I.R. to carry this coal for use in sections above this bridge, resulted in almost doubling the quantity so used. In 1865, the quantity of Burdwan coal used on the E.I.R. was 28,27,953 maunds.²⁸ But, in 1866, it rose to 50,79,612 maunds.²⁹ Towards the end of 1862, again, two other railways, the Eastern Bengal Railway³⁰ and the South Eastern Railway³¹ were opened for traffic. Both these railways having Calcutta as their terminus, Burdwan coal was of easy access to them. The amount used on the Eastern Bengal Railway during 1867 and 1868 were about 16,110 tons and about 16,330 tons, respectively.³² Both the E.I.R. and the Eastern Bengal Railway were using, even at this period, a certain amount of imported coal for some minor purposes other than locomotive.³³ But, the coal used on the South Eastern Railway was entirely Burdwan coal.³⁴ The same was true of the Delhi-Umballa Section of the Delhi-Punjab Railway, which

27. *Supra*, Chap. V, p. 138.

28. *The Statistical Reporter*, (Calcutta) 10 Sept. 1869, p. 27.

29. *Ibid.*

30. Davidson, *op. cit.*, p. 223.

31. *Ibid.*, p. 228.

32. *The Statistical Reporter*, 10 Sept. 1869, *op. cit.*, p. 27.

33. *Ibid.*

34. *Ibid.*

could make use of the supplies at Delhi, the terminus of the E.I.R. in Upper India.³⁵ Amongst the industries using this coal during this period, the most important was jute. The number of jute mills in the neighbourhood of Calcutta had multiplied to a great extent during this period.³⁶

The extensions of the E.I.R. into the coal area during this period, i.e., the sixties of the nineteenth century, were rapid and successive. The first extension was made in the early sixties when the experimental line, which then terminated at Raniganj, was carried up to Barakar, about 22 miles further northward.³⁷ In the sixties, also a small branch from near Barakar to Singharron was constructed.³⁸ The chord line, traversing the entire coal district from south to north, with a branch to the newly opened coal mines of Karharbari, was completed by 1871,³⁹ whereby the circuitous route via Rajmahal for the carriage of coal to Upper India could be avoided.

As a result of the inter-play of these factors, i.e., increasing demand on the one hand, and the increasing transport facilities on the other, which made it possible to meet these demands, the output from the Burdwan coal-field was high during all these years, and towards the late sixties, it rose to above 1,00,00,000 maunds a year. The amount mined during the years 1866, 1867 and 1868, was 1,07,90,035 maunds, 1,18,47,178 maunds, and 1,34,50,829 maunds, respectively.⁴⁰ In 1860, the total number of steam engines in use in this field was 28, with an aggregate horse power of 490, while in 1868, 61 engines with an aggregate of 867 horse power were in use.⁴¹

Thus, by the seventies, the coal industry of the Burdwan area arrived at a position, which, when compared to that it had held in the forties, might be described as a major step forward

35. *The Statistical Reporter*, 10 Sept. 1869, *op. cit.*, p. 27.

36. Anstey, *op. cit.*, p. 279.

37. Report to the Sec. of State for India in Council. on Rlys in India for 1865-66, *Parl. Pap.*, (H.C.), 1866, LII, (3696), p. 4.

38. Report to the Sec. of State for India in Council. on Rlys in India for 1868-69, *Parl. Pap.*, (H.C.), 1868-69, XLVII, (4190), App., p. 29.

39. Report to the Sec. of State for India in Council. on Rlys in India for 1870-71, *Parl. Pap.*, (H.C.), 1871, LI, (C. 418), p. 3.

40. *The Statistical Reporter*, 10 Sept. 1869, *op. cit.*, p. 27.

41. *Ibid.*

and as it will be apparent from all that has been said so far, the role of the E.I.R. in this development was really a crucial one. It is, however, true that it was not until the end of the nineteenth century that the major development of this coal industry began. Apart from meeting the needs of Upper India, this coal-field then started exporting coal to Straits Settlement, Ceylon and Western India.⁴² The characteristic feature of Indian Coal resources is their extreme concentration in the area under discussion. With increasing facilities during the succeeding years, the production of this coal-field was continually on the increase and it is because of the speedy development of the resources of this area that India now ranks very high amongst the coal-producing countries of the world.⁴³ But, even so, the progress that was made in the earlier period does not lose its importance, and the achievements of this early period were truly remarkable in view of the fact that they were accomplished in spite of several positive hindrances. The first of these was the high railway charges. It was not until 1891 that these were revised for the first time which resulted in a reduction.⁴⁴ Secondly, until the sixties, the E.I.R., which was the only railway serving this coal-field during this period, terminated precisely at the 35th mile of the Raniganj district⁴⁵ and this meant that the mines to the north and to the west had very limited access to the railway opened.⁴⁶ Besides, all throughout this period, there was a chronic shortage of waggons and engines on the E.I.R. operating there.⁴⁷ In view of these latter two factors, Oldham estimated in 1859 that the railway line did not and could not carry more than 2/5 of the whole amount of the coal mined here.⁴⁸

During this period, when coal industry was making rapid strides in Bengal, several attempts were made to work with

42. Ghose, *op. cit.*, p. 357 and p. 359.

43. O.H.K. Spate, *India and Pakistan*, (London and New York 1960), p. 258.

44. Ghose, *op. cit.*, pp. 367-368.

45. Halliday to Baker, 24 Oct. 1851, Rly. Letts. Encl., Vol. IV.

46. Report on Coal Resources and Production of India by T. Oldham, 1867, App III, p. XXV, *Sel. Govt of India*, No. 64.

47. *Ibid.*

48. *Ibid.*

modern method, the iron-ores known to exist in different parts of the northern part of India. The demand for iron created by the introduction of the railways in the area was the main impetus to all these efforts.⁴⁹ Chronologically the efforts made at Birbhum should be mentioned first. As early as 1850, when the contract had just been signed between the East India Company and the E.I. Rly. Co., Birbhum was mentioned by the Court of Directors as one of the places in Bengal where the manufacture of iron could be started to meet the demand that would subsequently arise due to the construction of railways in the area.⁵⁰ About 1855, Messrs. Mackey and Co. commenced operations here on a small scale, and on the success of these initial efforts, they intended to enlarge their concern.⁵¹ Operations were continued here until 1875.⁵² About the same period, similar efforts were being made in the Himalayan districts of Kumaun and Garhwal. The suitability of these areas, which contained valuable iron ores, for the establishment of iron-works, was being insisted upon by the Court of Directors since the early fifties, when the import of iron from England became a great difficulty.⁵³ Operations were first started as a government enterprise⁵⁴ and later on, were taken over by two private companies. In 1862, these were amalgamated under the name of the Kumaon Iron Works.⁵⁵ Operations were carried on by this Company until 1876 when these were again taken over by the Government.⁵⁶ But, even in the early eighties, the measure of success attained here was by no means notable

49. Public Letter to Govr. Gen.-in-Counc., 11 Dec. 1850, No. 27, Rly. Des. Beng. Ind., Vol. I, p. 58.

50. *Ibid.*

51. Messrs. Mackey and Co. to Stephenson, 19 Jan. 1856, Rly. Letts., Encl., Vol. XIII.

52. R. Chaudhuri, *The Evolution of Indian Industries*, (Calcutta 1939), p. 117.

53. Fin. (Rly.) Des. to, 26 July 1854, No. 12, Rly. Des. Beng. Ind., Vol. II, p. 34.

54. E. H. Stanley, Sec. of State for India to Gov. Gen.-in-Counc., 24 Feb. 1859, No. 16, Rly. Des. Beng. Ind., Vol. III.

55. Chaudhuri, *op. cit.*, p. 117.

56. S. K. Sen, *Studies in Industrial Policy and Development of India (1858-1914)*, (Calcutta 1964), p. 107.

and the entire operations were in a defunct state.⁵⁷ At Raniganj, actual operations were started as late as 1874, when the Bengal Iron Works Company was established. The Company managed somehow to carry on their operations and it was not until the beginning of the next century that some success was achieved here.⁵⁸

The achievements in this particular sphere of industrial activities in Northern India during the period following the introduction of railways there can by no means be stated to be spectacular. As we have seen, all the attempts, excepting the one at Raniganj, failed. The causes of failure lay in a variety of circumstances, the chief being the failure of the supply of fuel. The kind of fuel used was charcoal, since coal was not available in the neighbouring area and Burdwan coal, because of the distance it had to be carried over, was not of easy access. Now, the manufacture of iron on a large scale using charcoal as fuel has nowhere been a practical proposition because of the natural limit to the capability of forests in the vicinity of such iron-works to supply the timber needed.⁵⁹ This was what happened in the case of Birbhum and Kumaon ventures.⁶⁰ But, even these abortive attempts show how industrial activities were being stimulated in the Gangetic Valley in the wake of the introduction of railways there and so, they have some importance from the point of view of our study.

We now focus our attention on the effects of the operation of the E.I.R. on the agricultural development of the areas they served. The effects of railways on the agricultural development of India as a whole over the last hundred years of railway expansion there, have been far-reaching. Indian economy is, and has been, through ages, basically agricultural. The difficulties of transport, prior to the introduction of railways and other means of communication, however, resulted in the market being too limited and specialisation was not generally widely practised. Each unit, depending mainly on its local re-

57. S. K. Sen, *op. cit.*

58. Spate, *op. cit.*, p. 286.

59. Report of J.O'B. Beckett, Deputy Collector, on Iron Mines in Kumaon, 31 Jan. 1850, *Selections from the Records of the Government of the N.W. Provinces*, Part XIII, App. 10, p. 38.

60. Chaudhuri, *op. cit.*, p. 117.

sources, was subject to immense fluctuations of prices even within a very limited period of time.⁶¹ Again, in India, agriculture had always been dependent on the availability of the monsoon and the failure of the monsoon over any region in any particular year had always meant, in the absence of the means of transport facilitating speedy supply of food from the areas of abundance, the out-break of local famines with continuous sufferings and even mortality of the people over a prolonged period. Railways, in the first instance, enlarged the market for the produce of the village and thereby gave a great impetus to increased and specialised production. The enlarged demand they created also increased the prices of this produce and the distribution of supplies they facilitated, led, to a certain extent, to the uniformity of prices amongst different areas. Different parts of the country became increasingly inter-dependent for their supplies of agricultural produce and this was of great importance in times of famine in the country. We would now examine to what extent these developments were facilitated in Northern India in our period by the operation of the E.I.R. there.

To show the extent of specialisation and increased production in the sphere of agriculture in Northern India, as facilitated by the E.I.R. specifically, we limit our observations to a single item of agricultural produce in the area, namely, cotton of the N. W. Provinces. Both the soil and the climatic conditions in the N. W. Provinces were described to be peculiarly suitable for the cultivation of cotton to any extent.⁶² But, during the middle of the nineteenth century, cotton used to be cultivated over a very limited area here. Thus, in 1849, only 10,02,040 acres were sown with cotton, though the area suitable for such cultivation was reported to be 16,89,682 acres.⁶³ The reason for it was that the market for the surplus produce of this province was very limited. In the earlier decades of

61. Gadgil, *op. cit.*, p. 5.

62. Sir George Couper, Sec. to the Gov. of N.W. Provinces, to W. Grey, Sec. to Govt. of India, 27 Jan. 1862, *Parl. Pap.*, (H.C.), 1863, XLIV, (132), p. 142.

63. W. Muir, Sec. Sudder Board of Revenue, N.W. Provinces, to C. Allen, Offg. Sec. to Govt. of N.W. Provinces, 27 Feb. 1849, *Parl. Pap.*, (H.C.), 1857, XXXII, (296), p. 38.

the century, the East India Company used to export a considerable quantity of this cotton to China and it was a great incentive to increased production.⁶⁴ But, since 1833, the year which marked the end of the East India Company's monopoly in the Chinese trade, supplies to China were on the decline.⁶⁵ So far as the internal market was concerned, supplies used to be made from Mirzapur, the great cotton mart of the N. W. Provinces, to Ghazipur, Patna, Murshidabad and so on.⁶⁶ But, obviously, the limited means of communications prevented any large inroad of the Upper Indian cotton in the areas eastward.⁶⁷

But, by this time, i.e. the mid-nineteenth century, the possibility of the rise of demand for this cotton in a different quarter was apparent. England was during this period one of the largest importers of cotton for her manufacturing industries. The country from which her supplies were usually drawn was the United States. But, throughout the earlier decades of the nineteenth century, cotton both from the N. W. Provinces and to a greater extent, from the Central Provinces and Berar, had a steady inlet into the markets of Great Britain. But, the price that it could command there was much lesser than that of the better quality American cotton.⁶⁸ But, the Mexican War of 1846-48, when supplies from the United States were on the decline, definitely showed the importance of India as an alternative source to fall back upon.⁶⁹ Improvement in the quality of cotton grown in different provinces in India and also the development of communications between the cotton-fields and the ports of shipment were being seriously considered by the Government by the middle of the nineteenth century.⁷⁰

64. Copy of H. H. Bell's Minute addressed to Allen, 8 Oct. 1846, *Parl. Pap.*, (H.C.), 1857, XXXII, (296), p. 143.

65. *Ibid.*

66. W. R. Money, Collector of Mirzapore, to E. A. Reade, Commr. of Revenue, Benares, 6 June 1848, *ibid.*, p. 38.

67. Cotton was never extensively cultivated in Bengal because of the unsuitability of her soil for this kind of production. Facilities of communication could create a large market for Upper Indian cotton there.

68. Tooke and Newmarch, Vol. VI, *op. cit.*, p. 501.

69. *Supra*, Chap. II, pp. 23-24.

70. The voluminous correspondence amongst different Government authorities both in London and India during this period on the subject

It was not long before that the occasion did arise when England had to turn to India for large supplies of cotton. In the early sixties, the Civil War in the U.S.A. reduced the supplies from that country to a minimum, and England was forced to buy cotton from other sources.⁷¹ Demands on India during this period were exceptional and the price of Indian cotton rose high.⁷² Improved communications in the country enabled the cultivator to seize this opportunity to sell his surplus produce and exports of cotton from India to England, as shown in the following statistics,⁷³ sharply increased —

1859	1860	1861	1862	1863
509,695	562,738	986,280	1,071,768	1,229,984
	1864	1865		
	1,399,514	1,266,513		
	(In bales).			

Concentrating our attention on the N. W. Provinces, we find that the impact of this cotton boom of the early sixties was widespread there. Up to May or June 1862, the market price of cleaned cotton had never reached higher than from nine or ten rupees per maund in Meerut and other Western districts of this province to fifteen or sixteen rupees in Mirzapur and other eastern ones. But, the sudden demand from England created a spirit of speculation and the price, both in eastern and western districts, rose high. This is shown in the following statistics⁷⁴—

Month	Meerut	Agra	Mirzapur	Ghazipur
May	Rs. 7 to 9	Rs 11 to 14	Rs 11	Rs 15 to 17.8
June	„	Rs 12 to 14	Rs 16	Rs 15 to 17
July	Rs. 10	Rs 11 to 19	Rs 31.4	Rs 17 to 24
			(Maximum)	

of improved cultivation of cotton in the latter country may be referred to here. Cf. *Parl. Pap.*, (H.C.), 1857, XXXI, (296).

71. *Supra*, Chap. II, p. 38.

72. Gadgil, *op. cit.*, p. 15.

73. *Ibid.*

74. G. H. M. Batten, Sec. to Sudder Board of Revenue, N.W. Provinces, Allahabad, to Couper, 18 Oct. 1862, *Parl. Pap.*, (H.C.), 1863, XLIV, (132), p. 243.

Month	Meerut	Agra	Mirzapur	Ghazipur
August	Rs 12	Rs 13.8 to 17.8	Rs 22.8	Rs 25 to 22 (Maximum)
September	Rs 10 to 15	Rs 14.10 to 23	Rs 30	Rs 22 to 26.8 (Maximum)
October	Rs 12.8 to 14			

(per maund of 80 lbs.)

The exports of cotton from the province to Calcutta were increasing steadily. In 1861, the cotton traffic passing through Benares eastward was described to be unprecedented during the span of the last 30 years.⁷⁵ The exports from the province during the six months between May and October, 1862, amounted to 2,10,650 maunds.⁷⁶ The area under cotton cultivation was roughly 1,177,000 acres in the year 1862-63 as against 9,65,000 in the previous year, i.e. there was an increase of 22%.⁷⁷

Now, the role of the E.I.R. in all these developments has to be critically judged. Even in 1861, this railway passing through the province was not much resorted to by the cotton merchants for the export of their cotton eastward. The line was completed from Etawah to Allahabad.⁷⁸ But, between the latter place and Ghazipur to the east, there was still a break on the line⁷⁹ and this involved transshipment. The spirit of speculation had not as yet been so strong and widespread as to induce people to resort to the railway notwithstanding the trouble and expense of reshipment.

But, things were definitely changing from the following year. In that year, the rising demand in Britain forced all the supplies in the province, even those for local consumption, to be directed towards Calcutta and these were being hurried down the

75. P. Saunders, Senior Commsr. to report upon the cultivation of cotton, to Grey, 7 June 1861, *Parl. Pap.*, (H.C.), 1863, XLIV, (132), p. 67.

76. Batten to Couper, 18 Oct. 1862, *ibid.*, p. 245.

77. *Ibid.*

78. Saunders to Grey, 7 June 1861, *Parl. Pap.*, (H.C.), 1863, XLIV, (132), p. 67.

79. *Ibid.*

country by every possible means of conveyance.⁸⁰ So far as the railway was concerned, the question of transshipment was still there since it was not before 1865 that the E.I.R. was completed for the entire distance from Howrah to the left bank of the Jumna at Delhi.⁸¹ Within the province, the mileage of this railway opened, with breaks at certain points, was far too small when compared to that of roads, the former being 545, and the latter, 1,960.⁸² But, wherever available, the railway was being resorted to for the transport of cotton to a much greater extent than the traditional means of conveyance, such as carts or country boats. Thus, between 9 August and 9 October during the year 1862, 22,567 maunds of cotton arrived at Allahabad by rail from Agra, while the arrival by carts and country boats there during the same period was 1,000 maunds and 5,000 maunds, respectively.⁸³

The gradual increase in the amount of cotton carried by the railway in 1862, is marked in the following statistics :⁸⁴

	Maunds
May	1,191
June	2,815
July	4,020
August	17,206
September	12,320
	37,552

The period of cotton boom was over by the mid-sixties. But, by this time, an internal demand for the Upper Indian cotton was becoming important. This demand was created by the indigenous cotton mills established in Cawnpur and the adjoining areas and also in the vicinity of Calcutta. The con-

80. Batten to Couper, 18 Oct. 1862, *Parl. Pap.*, (H.C.), 1863, XLIV, (132), p. 243.

81. *Supra*, Chap. V, p. 138.

82. Statement showing the district mileage for roads and railways in the N.W. Provinces, Encl. 6, in No. 64, *Parl. Pap.* (H.C.), 1863, XLIV, (132), p. 220.

83. Batten to Couper, 18 Oct. 1862, *ibid*, p. 246.

84. Batten to Couper, 18 Oct. 1862, *Ibid*.

sumption by the latter of the Upper Indian cotton for the year 1876-77 was estimated to be 1,15,066 maunds.⁸⁵ At the same time, the external market for this cotton was not lost. During all these years, there was a steady export of cotton from the port of Calcutta to Great Britain.⁸⁶ The bulk of the traffic in cotton from the Upper Indian provinces to Calcutta was being carried by the E.I.R. during this period. Thus, during the year 1876-77, the imports of the Upper Indian cotton into Calcutta by road amounted to only 1,744 maunds while by the river, no such import was reported.⁸⁷ The proportion carried by the E.I.R. during the same year to Calcutta may be assumed from the following statement,⁸⁸ making due allowance for that by the road, which, as we have just mentioned, was negligible :—

	Total exports	By rail and road
Agra	1,56,200	1,53,300
Cawnpur	1,03,800	98,600
Delhi	70,200	70,200
Mirzapur	35,600	900
Patna	29,500	6,400
Bulandshahr	27,900	27,900
Aligarh	13,300	13,300
Ghazipur	14,800	2,300
Moradabad	9,200	9,200
Meerut	5,600	5,600
Muzaffarpur	5,300	1,000

(In maunds)

During this period, the E.I.R. was carrying a large amount of cotton from the Jubbulpore area as well. The branch of this railway from Allahabad to Jubbulpore was opened in August 1867,⁸⁹ and in July 1868, it was reported to be carrying extensive quantity of cotton from the Jubbulpore area towards the

85. *Report on the Internal Trade of Bengal for 1876-77*, p. 88.

86. The reports on the internal trade of Bengal for these years may be referred to here.

87. *Report on the Internal Trade of Bengal for 1876-77*, p. 88.

88. *Ibid*, p. 89.

89. Report to the Sec. of State for India in Council on Rlys in India for 1867-68, *Parl. Pap.*, (H.C.), 1867-68, LI, (4035), p. 3.

N. W. Provinces. One of the main consumers of this cotton was the Elgin Cotton Mills at Cawnpore.⁹⁰ A large quantity of this Central Indian cotton used to find their way to Calcutta by the main line of the E.I.R. The quantity so carried for the year 1876-77 was 12, 600 maunds.⁹¹

However, in the N. W. Provinces, the area under review here, we might say that in the increased cultivation of cotton in these years, the role of the E.I.R. was obviously very important. By carrying off the surplus product to different demand centres, it gave a great impetus to production of cotton in this province. We can have an idea of the extent of this increase in the cotton cultivation here from the following statistics. Taking a period of fifteen years from 1874 to 1889, the average areas under cotton in this province during the first five years was 1,072,600 acres; in the next five years, 1,479,800 acres; and in the last five years, even with two poor seasons, 1,536,000 acres.⁹² In 1886-87, no less than 1,768,000 acres in this province were sown with cotton.⁹³

We would now try to examine if the general prices in the areas served by the E.I.R. were, in our period, affected in any way by the operation of that railway. As we have indicated earlier, the relation between prices and the improved transport in any given area is very close. Improved transport leads to enlarged market for the produce of the area and this raises the prices of the produce. Improved transport also means more even distribution of supplies in the area and this leads to greater uniformity in prices. Referring to the conditions in India in this respect, we do notice a gradual rise of prices there from the end of the nineteenth century. On the whole, the external factors such as a shortage in the supply of, and an increase in the demand for, staple commodities in world markets, the increased gold supply from the world mines and so on, had been the dominant factors in this upward movement of prices

90. Report of H. Rivett-Carnac, Cotton Commissioner for the Central Provinces and the Berars, on the operation of his department for the year 1867, *Parl. Pap.*, (H.C.), 1868-69, XLVI, (289), p. 21.

91. *Report on the Internal Trade of Bengal for 1876-77*, p. 89.

92. *Statistical Tables Relating to Indian Cotton, Bombay 1889* (A.F.B.), p. 10.

93. *Ibid.*

in India.⁹⁴ At the same time, this movement was due to the operation of some internal factors as well and of these, the improved transport in the country should be specially mentioned.⁹⁵ K. L. Datta, who was appointed by the Government to carry on an investigation into the matter, writes—"One of the most important factors that have raised the general price-level in India is the expansion of communications, both railways and roads. . . . Railways have now linked up different parts of the country and have constituted India into, as it were, one market. . . . The effect of export from district to district is in many cases, . . . to raise prices".⁹⁶ Besides, the railways led to a great influx of silver bullion in the country to meet the charges for their construction⁹⁷ and this can be said to have influenced to some extent the rise of prices there.⁹⁸

The process might be shown to be operative even in our period in areas directly served by the E.I.R. and the role of the latter in this respect also can be pointed out. We refer to the gradual rise of prices of grain in the N. W. Provinces during the period 1860-66.⁹⁹ The most obvious reason for it was the successive failure of crops in the province. The year 1860 was a famine year there. In 1864, and again in 1868, there were bad harvests.¹⁰⁰ But, apart from this factor, the newly opened line of the E.I.R. had an important part in this development there. Since the early sixties, different sections of the E.I.R. in the province were opened in quick succession and the enlarged facilities of marketing the produce of the province thus secured seem to have led to a rise of prices

94. Resolution of the Govt. of India in the Finance Department, No. 1614-F, Accounts and Finance Miscellaneous, dated Simla, 24 Oct. 1914, as mentioned in K L Dutta, *Report on the Enquiry into the Rise of Prices in India* (Calcutta 1914), Vol. 1, p. iii.

95. *Ibid.*

96. Datta, *op. cit.*, pp. 78-79.

97. *Supra*, Chap. II, pp. 47-48.

98. Datta, *op. cit.*, p. 96.

99. The rise of prices as mentioned here should be distinguished from the abnormal price conditions in this province during the famine of 1860-61, to which we would refer later in this chapter.

100. Memorandum by C. Currie, Offg. Judicial Commissioner, Oudh, 4 March 1872, N.W. Provinces Revenue Proceedings, 10 Oct. 1874, No. 41, Vol. LXXXIII, p. 111.

there.¹⁰¹ Apart from this, there was an indirect effect of the operation of the railway in the province on the prices of grain. The increasing facilities of communication provided by this railway along with other feeder roads and river routes acted as an impetus to the increased cultivation of cotton in the province. This probably meant a diminution in the grain supply and the consequent rise in their prices.

In the context of the study of the effect of the E.I.R. on the agricultural development of the areas it served, the last point that we would discuss is the role that this railway had in years of famine in those areas. The role of improved transport became all the more important in India in such abnormal years when production of food crops proved deficient in particular areas. With the improvement in communications there since the middle of the nineteenth century, a completely new tendency began to operate on the availability of the local produce, i.e., the demands of an extended market having higher ruling prices—market of both inland and external character. Thus, in the years preceding the famine in the Lower Provinces of Bengal in 1866, the process of depletion of grain from there towards the N. W. Provinces was considerable.¹⁰² Exports by sea from the former province in the two years immediately preceding the famine were described to be upon an unprecedented scale, the quantity being 1,64,23,478 maunds for the year 1863-64 and 1,91,86,522 maunds for the year 1864-65.¹⁰³ The increased production which we have shown as an effect of improved transport, was, thus, generally speaking, not available for the local benefit. The surplus produce which formerly used to be stored locally for consumption and sale in years of low produce, was being carried off by the railways and other means of communication to markets beyond and this increased the possibilities of scarcity whenever the produce in any area was below the normal average.

101. Memorandum by C. Currie, Offcg. Judicial Commissioner, Oudh, 4 March 1872, N.W. Provinces Revenue Proceedings, 10 Oct. 1874, No. 41, Vol. LXXXIII, p. 111.

102. A section of the Board of Revenue's Preliminary Report on the Land Revenue Administration for 1865-66, *Parl. Pap.*, (H.C.), 1867, LI, (335), p. 55.

103. *Ibid.*

But, here, we have to remember that there was a limit, under laws of demand and supply having a free inter-play in those years of Free Trade and Laissez Faire political economy, to the period during which movements of grain would remain outward. The prices in the scarcity areas, on the increase since supplies were limited, would reach a level in course of time that would divert the outward movements of grain to those areas and this would, ultimately, reduce prices and stabilise conditions there. And as in the outward movement of grain so also in its inward movement, the role of improved transport would be vitally important.

This can clearly be shown to have taken place in the famine in the N. W. Provinces in 1860-61 and the role of the limited section of the E.I.R. from Allahabad to Cawnpore then opened there, can also be indicated to some extent. In 1860-61, there was an out-break of a local famine in the N. W. Provinces. The causes of this famine were manifold, the immediate one being the failure of rains over the two years preceding this calamity.¹⁰⁴ The areas worst-hit lay in Upper Doab and beyond the frontier of this province, in the Punjab. But, areas in the Lower Doab also were affected to a great extent.¹⁰⁵ Prices rose high, wheat being sold in Agra, Muttra, Aligarh and Meerut, at about four rupees a maund.¹⁰⁶ But, supplies were abundant in the districts surrounding the famine tract—to the southeastward, in Benares division, to the south-westward Saugor and Jubbulpore territories, Gwalior and Dholepore, and also in Oudh districts to the north.¹⁰⁷ In some of these areas, wheat was being sold at this time from fourteen annas to Rs. 1-4 per maund.¹⁰⁸ Supplies began to pour into the famine tract from all these surplus areas. Allahabad was supplied from Benares.

104. B. M. Bhatia, *Famines in India, A Study in Some Aspects of the Economic History of India, 1850-1945*, (London & New Delhi, 1963), p. 59.

105. Report on the Famine of 1860-61 in the N.W. Provinces of India by Colonel R. Baird Smith, Section I, *Parl. Pap.*, (H.C.), 1862 XL, (20), pp. 24-26.

106. Report of Colonel R. Baird Smith on the Commercial Condition of the N.W. Provinces, 8 May 1861, *Parl. Pap.*, (H.C.), 1862 XL, (29), p. 9.

107. *Ibid.*

108. *Ibid.*

From Allahabad, supplies were proceeding towards Agra along the Jumna and to some extent, by the Ganges as well.¹⁰⁹ From Allahabad, the newly opened section of the E.I.R. carried about a million of maunds of grain to Cawnpore during the period from January 1860 to February 1861.¹¹⁰ The quantity carried by it per month during this period was as following :¹¹¹

	Maunds	Seers
January 1860	30	34
February 1860	—	—
March 1860	439	—
April 1860	111	—
May 1860	—	—
June 1860	419	25
July 1860	209	20
August 1860	5,127	17
September 1860	79,174	28
October 1860	122,106	24-8
November 1860	106,413	6-8
December 1860	187,548	1-8
January 1861	241,317	12

As a result of these steady importations, much improvement in the conditions prevailing in the entire famine region was indicated. The high prices prevailing in the famine region were relieved subsequently.¹¹² Referring to this, the commission appointed to enquire into the famine in Bengal and Orissa in 1866 wrote in their report,—“The high prices which occurred in 1860-61, in the early part of the season, were relieved by enormous and most energetic private importations. The gentleman who was then commissioner of Delhi tells the President that the grand trunk road was said to have been worn out in 15 days by the enormous use of it, and the President himself saw the railway stations between Allahabad and Cawn-

109. Report of Colonel R. Baird Smith on the Commercial Condition of the N.W. Provinces, 8 May 1861, *Parl. Pap.*, (H.C.), 1862, XL, (29), p. 10.

110. *Ibid.*, pp. 9-10.

111. *Ibid.*, p. 9

112. Report of the Commissioners Appointed to Inquire into the Famine in Bengal and Orissa in 1866, *Parl. Pap.*, (H.C.), 1867, LI, (335), p. 230.

pore blocked up with grain awaiting transport, and every cart, bullock, camel, donkey, in short every means of conveyance available in the country in active use to transport grain from Oude".¹¹³ The following spring, harvest everywhere beyond the influence of drought, was expected to be above the average yield. Under these circumstances, greater optimism came to prevail as regards the conditions to be expected in the period following. The position was described by Baird Smith in the following language—"And so far as mere supply of food is concerned, such a proportion i.e., the spring harvest of the famine tract itself would be in itself almost a guarantee against any absolute deficiency. Reinforced by the surplus produce, which would instantly begin to pour in from the outside on any great rise of prices, as past experience has amply proved, the combined quantities would, I feel confident, keep the markets at least sufficiently supplied to make a real dearth of food altogether improbable. On this point I must say as yet I do not see the faintest grounds for anxiety".¹¹⁴

The above case shows how, by facilitating the free movement of grain under purely commercial conditions by traders and merchants, the E.I.R. played an important role in providing relief in times of scarcity. At the same time, it provided the Government with the means of transport whenever the latter considered it necessary to undertake relief operations during famines of exceptional scarcity. Thus, in the famine in Bihar in 1874, the districts north of the Ganges were provided entirely by Government supplies from Calcutta, and almost the whole amount, estimated at about 300,000 tons, was carried along the E.I.R.¹¹⁵ The Bengal Administration Report for the year 1874-75 states in this context—"Never, probably, has the condition and effect of railways had a more important influence on the well-being of a people than that of the East Indian Railway had during the year 1874 on the people of Behar.

113. Report of the Commissioners Appointed to Inquire into the Famine in Bengal and Orissa in 1866, *Parl. Pap.*, (H.C.), 1867, LI, (335), p. 230.

114. Report on the Famine of 1860-61 in the N.W. Provinces of India by R. Baird Smith, Section I, *Parl. Pap.*, (H.C.), 1862, XL, (29), p. 31.

115. *Beng. Admn. Report*, 1874-75, p. 319.

Without that railway it is not too much to say that the famine could not have been met. By the assistance of the railway alone did private trade suffice to meet the deficiency in the three districts south of the Ganges, and to some extent of Sarun also ; and it was due to the railway also that Government was enabled to supply the deficiencies in the northern districts, where private trade failed altogether to penetrate".¹¹⁶

In another respect, the railways served useful purposes during famines, i.e., by offering work to a great body of unskilled labourers. Practically, the various public works undertaken since the formation of the Public Works Department by Lord Dalhousie created wide scope of employment for such people and it resulted in a general increase in the wage rate. The Deccan Riots Commission in their Report referred to the competition for labour created by these public works in India and the benefit that labour could derive out of it. The Report states that as a result of this competition, the monthly wages of a common cooly in Bombay rose from Rs. 7-12-0 in the period 1860-62 to Rs. 13-8-0 in 1863.¹¹⁷

With the construction of the railways and the consequent improvement in the means of transportation in India, the character of the famines in the sub-continent changed considerably. Famine could never mean an absolute scarcity of food as we have noted above.¹¹⁸ All that it could imply was higher prices of food in consequence of which the poorer masses having very low purchasing power, had to suffer hardship. Under such conditions, the increasing scope of employment as offered by railways and other public works could be said to have some ameliorating effect. During the famine in 1860-61, the section of the E.I.R. then under construction in the Upper Doab, supplied a great additional means of relief to poor people. These railway works and other public works in the area under the Government Irrigation Department were stated to give daily employment to between 40,000 and 50,000 people.¹¹⁹ During the famine of 1866 which covered a wide area in the Lower

116. *Beng. Admn. Report*, 1874-75, p. 319.

117. *Report of the Deccan Riots Commission*, 1875, pp. 47-48.

118. *Supra*, pp. 160-162.

119. *Report on the Famine of 1860-61 in the N.W. Provinces of India* by R. Baird Smith, Section I, *Parl. Pap.*, 1862, XL, (29), p. 35.

Provinces of Bengal, the beginning of the construction of the chord line of the E.I.R. was being insisted upon by the local administrative authorities in view of the large scope for employment that it would create in the neighbouring areas of Deogarh and Monghyr.¹²⁰ In Birbhum, during the same period, the embankments on the E.I.R. passing through the district, were seriously damaged in a flood, and the work of repair on it provided employment to many poor people.¹²¹

Lastly, we can conclude this chapter by indicating the role which the E.I.R. played in our period as the carrier of the commerce of the region through which it passed. The point of interest here is the extent to which the E.I.R. as the only railway operating in the area concerned, was able to attract to itself that commerce from its traditional channel, namely, the river Ganges¹²² and the impetus that this railway gave thereby to it.

So far as the inland trade of the area during this period is concerned, our information is meagre, and it is not possible for us to discuss this aspect of the question in much details. But, the available facts regarding this branch of trade gives the impression that even towards the close of our period, it continued to resort, for its major part, specially during years of normal commercial activities, to the traditional river routes along the Ganges and its tributaries. Inland trade of the area continued to be mainly into the hands of the country merchants,¹²³ and these people, from the fact of the comparatively lesser distance to be covered by their goods, could possibly afford to resort to the slower but generally speaking, less expensive river routes. This we would show in a single instance.

During this period, the largest item of inland trade up the country was rice.¹²⁴ Different places in Bihar and the N. W.

120. Narrative of the distress and scarcity in the Lower Provinces by A. Eden, Sec. to Govt. of Bengal, accompanying Eden's letter to Sec. to Govt. of India, Home Dept., 10 June 1866, *Parl. Pap.* (H.C.), 1867, LI, (335), p. 18.

121. Report of the Commissioners Appointed to Inquire into the Famine in Bengal and Orissa in 1866, *ibid.*, p. 307.

122. *Supra*, Chap. III, p. 68.

123. Minute by Sir Richard Temple, Lieut. Govr. of Bengal, 14 Jan. 1876, p. 44, *Beng. Adm. Rep.*, 1874-75.

124. *Ibid.*, p. 253.

Provinces used to receive large supplies of rice from Malda and Dinagepur districts in North Bengal and to a lesser extent, from Eastern and Central Bengal.¹²⁵ Almost the entire quantity of this rice used to be sent along the Ganges,¹²⁶ though, at least the Central Bengal districts like Burdwan and Murshidabad, could avail of the E.I.R. passing through them for their supplies and the supplies from the districts of Malda and Dinagepur also could revert to that railway on crossing the Ganges near Sahebganj. The quantity of rice carried along the Ganges in three years 1872, 1873 and 1874, to N. W. Provinces and different places in Bihar, is given below :—¹²⁷

	1872	1873	1874
N. W. Provinces	12,95,702	16,13,852	1,67,998
Shahabad	—	52,037	—
Sarun	3,61,520	4,23,311	1,01,569
Tirhoot	1,29,528	56,070	40,563
Patna	8,80,778	9,71,001	2,20,719
Monghyr	59,700	23,628	13,199
Bhagalpur	24,190	26,402	34,098
Purneah	19,881	36,019	3,38,980
Santal Pergunah	2,575	29,302	22,247
		(in maunds)	

Almost the reverse was the position in respect of the foreign trade of the area. The area had an extensive foreign trade through the port of Calcutta. A greater absorption by the railway of both exports and imports in respect of this branch of trade was noticeable even within the bounds of our period. This process of absorption can clearly be shown in all the principal items of exports from the area, such as wheat, oil-seeds, salt-petre, hides and skins etc., and also in those of imports such as cotton piece-goods and salt.

Calcutta during all these years was exporting a large quantity of wheat to different foreign and Indian ports, the largest part being sent to Great Britain.¹²⁸ The yearly amount of these

125. *Beng. Adm. Rep.*, 1874-75, pp. 253-54.

126. *Ibid.*, p. 253.

127. *Ibid.*, p. 255.

128. *Report on the Internal Trade of Bengal for 1876-77*, p. 56.

exports were on the increase as shown in the following statistics :—¹²⁹

1872-73	1,96,560
1873-74	6,66,186
1874-75	3,80,132
1875-76	18,11,398
1876-77	52,85,635 (in maunds)

The bulk of this supply used to come from the N. W. Provinces and Bihar.¹³⁰ Cawnpore was the principal exporting place and the entire quantity was being sent from here by the E.I.R. serving as the only railway link between that place and Howrah opposite Calcutta.¹³¹

Oilseeds formed another important item of export from the port of Calcutta during these years, the principal purchases being made by North America and Great Britain.¹³² A steady increase in the amount so exported from year to year was noticeable during this period. The quantity of the exports of linseed alone was, in 1862-63, 20,87,276½ cwts,¹³³ and in 1870-71, it rose to 32,72,963½ cwts.¹³⁴ In the mid-seventies, the value of the amount exported generally exceeded £1,000,000.¹³⁵ Bihar and the N. W. Provinces were the main suppliers of this article to the port of Calcutta. During all these years, the E.I.R. was attracting to itself the greater part of these supplies. Thus, from the N. W. Provinces, the supplies along the Ganges during the years 1873 and 1874 were 4,17,814 maunds and 4,17,762 maunds, respectively. But, during the same years, the quantity that this province sent by the

129. Report on the Internal Trade of Bengal for 1876-77, p. 56.

130. *Ibid.*

131. *Ibid.*

132. *Beng. Adm. Report, 1874-75, p. 228.*

133. *The Commercial Annual or, a tabular statement of the External commerce of Bengal during the years 1861-62 and 1862-63, published by P. Bonnaud, Collector of Customs, Calcutta (Calcutta 1863), p. 48.*

134. *The Commercial Annual, or a tabular statement of the External Commerce of Bengal during the years 1869-70 and 1870-71, published by the Collector of Customs, Calcutta (Calcutta 1871), p. 48.*

135. *Beng. Adm. Rep., 1874-75, p. 228.*

E.I.R. were 14,01,960 maunds and 20,75,480 maunds, respectively. The district of Patna in Bihar sent in 1873 12,181 maunds by the Ganges and the quantity it sent by the E.I.R. during that year was 7,82,656 maunds. In the following year, the supplies by the river and the rail from this district were, 3,98,181 maunds and 5,20,513 maunds, respectively. The district of Shahabad despatched in 1873 about 12,181 maunds of oilseeds by the Ganges, while the quantity it sent by the railway during that year was 56,131 maunds. The quantities sent by the river and the rail from this district in the following year were 28,064 maunds and 76,801 maunds, respectively.¹³⁶

Very similar was the position in case of salt-petre, another important item of export from the port of Calcutta, during this period. The supplies used to come almost entirely from Bihar, and the main purchasers were United Kingdom, China, Mauritius and France.¹³⁷ The tendency of this traffic to resort to the railway i.e., the E.I.R. was well-marked during our period. The following comparative statement of the imports into Calcutta by the river and the railway¹³⁸ may be referred to here in order to show this tendency :—

	1872	1873	1874
By railway	2,96,316	3,59,276	3,53,501
By river	3,23,000	3,23,800	3,06,000
	(in maunds)		

The export trade of the port of Calcutta in hides and skins was more or less considerable. Almost the total number of these articles, which were mainly supplied from Bihar and the N. W. Provinces, used to be carried by the E.I.R. towards the port of Calcutta.¹³⁹ There was one practical difficulty in sending these by the river—specially during the rains. In a long river journey during that particular season of the year, these used to deteriorate very soon.¹⁴⁰

136. For all these details in export trade in oil-seeds, refer to *Beng. Adm. Rep.*, 1874-75, pp. 246-247.

137. *Beng. Adm. Rep.*, 1874-75, p. 251.

138. *Ibid.*, p. 252.

139. *Ibid.*

140. *Ibid.*

The two other important exports of the area were indigo and opium, the former having its market in the United Kingdom, France, North America, Trieste etc.,¹⁴¹ and the latter in China.¹⁴² Indigo was largely cultivated in Bihar¹⁴³ and large consignments used to go from here to Calcutta by the E.I.R. The total registered imports of Indigo into Calcutta during the year 1875-76 amounted to 1,19,600 maunds, of which 1,04,970 maunds were carried by the E.I.R.¹⁴⁴ Opium was mainly supplied from Bihar and Benares¹⁴⁵ and a considerable part of it found its way to Calcutta by the E.I.R. In 1874, this traffic on the E.I.R. amounted to 6,271 tons and in the following year, to 6,506 tons.¹⁴⁶

On the import side also, the bulk of the supplies was being carried by the E.I.R. Cotton piecegoods and salt were the most important items of imports through the port of Calcutta during this period.¹⁴⁷ In case of cotton piecegoods, the E.I.R. was carrying the largest share of the total imports through the port of Calcutta to different places up the country and the traffic in this type of goods on this railway far out-numbered similar traffic on all other lines of communication between the port of Calcutta and the entire part of Northern India including Eastern Bengal and Assam. In the year 1876-77, the value of the total imports into Calcutta by sea amounted to Rs. 9,67,63,105 and the inland exports from Calcutta of those articles by the E.I.R. during that year were valued at Rs. 7,38,92,800.¹⁴⁸ For the following year, these two figures were Rs. 11,35,01,500 and 7,82,70,574, respectively.¹⁴⁹

The import of salt towards the Upper Provinces from Calcutta was large, that port having its supplies mainly from the United Kingdom.¹⁵⁰ The supplies to the Upper Provinces were

141. *Beng. Adm. Rep.*, 1874-75, p. 222.

142. *Ibid.*, p. 351.

143. *Beng. Adm. Rep.*, 1875-76, p. 195.

144. *Report on the Internal Trade of Bengal* for 1876-77, p. 79.

145. *Beng. Adm. Rep.*, 1874-75, p. 351.

146. *Ibid.*

147. *Reports on the Internal Trade of Bengal* for all these years may be referred to here.

148. *Report on the Internal Trade of Bengal* for 1877-78, p. 50.

149. *Ibid.*

150. *Beng. Adm. Rep.*, 1875-76, p. 328.

mainly by the E.I.R. and the river traffic in this article towards that area was steadily on the decline.¹⁵¹ In 1872, the salt traffic of the E.I.R. amounted to 14,70,000 maunds and in 1873, it rose to 16,60,000 maunds.¹⁵² In 1874, there was a further increase in this traffic ; the amount carried by the E.I.R. during that year was about 17,00,000 maunds.¹⁵³

Thus, the goods traffic in the area, at least in the sphere of its foreign trade, was being increasingly absorbed by the railway operating there. This process of absorption was a feature common to different railways operating in different parts of India during this period and the result was a steady development of the external trade of India.¹⁵⁴ It is, however, a matter of controversy whether this development was beneficial for the country as a whole. Amongst nationalist writers, it was strongly believed that the steady export of raw materials and foodstuffs as facilitated by the railways in India had been most injurious to the country. Her nascent industries thus remained ill-provided and the people ill-fed. But, the question is whether Indian foreign trade could assume any other character in the latter half of the nineteenth century. Her indigenous industries, having failed to compete with the cheap machine-made goods from the west, were on the decline and the modern industries which came in the wake of the railways there, were yet a long way to full development. Under these circumstances, if India were to earn foreign money, she could do it by the sale of her only available resources and her only available resources then were the produce of her soil. Benefits to the actual tillers of the soil through this expansion of trade were not altogether negligible. Sir Richard Temple, the Lieutenant Governor of Bengal wrote in 1876—"For many years past the exportation of raw produce of Bengal has been exercising a progressively potential influence on the material and social condition of the peasantry, enabling them to get increased returns for their labour, whereby they can afford to lodge, feed, and clothe themselves better than formerly, and to fill their dwellings with superior implements and furniture, causing new wants to arise in proportion as the

151. *Beng. Adm. Rep.*, 1874-75, p. 256.

152. *Ibid.*

153. *Report on the Internal Trade of Bengal for 1876-77*, p. 62.

154. *Anstey, op. cit.*, p. 146.

means of supplying them are augmented, and creating a spirit of self-reliance, and a disposition to appreciate and assert the rights which pertain to the tillers of the soil".¹⁵⁵

Here we conclude our discussion on the effects of the E.I.R. on the economic development of the areas it served during the first twenty-four years of its operation. The achievements of this initial period of the operation of this railway, while not spectacular by themselves, are of great historical importance. They represent the first phase of a long history of further developments in the succeeding years. In the context of all these, the E.I.R. can really be said to have opened a new chapter in the economic history of the Gangetic Valley.

155. Minute by Sir Richard Temple, Lieut. Govr of Bengal, 14 Jan. 1876, p. 46, *Beng. Adm. Rep.*, 1874-75.

CONCLUSION

In conclusion, we recapitulate the entire story of the origin, development and achievement of the E.I.R. during the period 1845-1879. The idea of the construction of this line, which was one of the earliest railway projects for India, was conceived in the forties of the nineteenth century. As we have seen, circumstances were not initially very favourable to the adoption of this project. Its sheer size involved immense capital costs and one of the major problems was as to where this capital was to be raised. Indian capital was shy and the British capital, due to widespread disbelief in England in those days in the mechanical practicability and the commercial profitability of railways in India, was not easily available. The projectors of the E.I.R., like those of all other original railway schemes for India, had to strive hard over a prolonged period for a Government guarantee at a certain rate of return on the capital to be invested. The Government, though initially opposed to the idea of any such financial involvement on its part, ultimately gave way since this kind of guarantee was found to be the only way of inducing the capitalists in England to invest their money in Indian railway projects. But, in the initial phase of the history of the E.I.R., when conditions in English money market happened to be very difficult, even the Government guarantee was not very effective in securing the required amount of working capital. However, the progress in the construction of railways in India gradually removed the misapprehensions in England as to their possibilities and the succeeding years saw a much easier flow of British capital for Indian railways. So far as the E.I.R. was concerned, the financial trouble that it experienced in the forties was never repeated in the later period when it undertook the construction of different extensions. It was only in years of financial stringency in England that the Railway Company faced some difficulties in raising the capital needed.

But even when money ceased to be a problem, other problems relating to the construction of the line itself remained. The selection of the route of the line was the initial difficulty in this respect. The E.I.R. was the first railway line to be

built in the northern part of India and it was also projected to be the trunk line of railway there. Naturally, the objectives which were expected to be fulfilled by it were various, covering all aspects of life in the entire area, economic, social and political, and along with these, there was the requirement of its being a paying line. The selection of a route for this railway which would reconcile all these various objectives in view had not been an easy task. After a prolonged controversy, the decision was to take the line along the Ganges. This route was better calculated to meet all the ends in view—specially that relating to the commercial profitability of the railway. It passed through densely populated and commercially important areas and this held out the possibilities of greater availability of traffic.

The actual construction of the line after its route had been selected needed the prior provision of three things—land, labour and materials. Of these three, land and labour proved to be comparatively lesser difficulties. Land was procured at a cheaper cost though the entire process involved in taking possession of it was much complicated and included the definition and settlement of numerous claims in the land and property thereon. Labour was a problem in this sense that technical labour was not, generally speaking, procurable in India. Technical men were very few in India in those days and the wide range of technical labour which the E.I.R. needed, like that of all other contemporary Indian railways, were mostly men sent from England. Apart from the question of time involved, the higher cost incurred in this import of English labour remained a constant problem throughout our period.

But, what proved to be a real difficulty in the construction of the line was the provision of materials. Although India was potentially rich in raw materials, she was handicapped in exploiting these resources owing to the lack of modern machines and communications and the materials for almost all her railways during this period had to be brought from England. In the case of the E.I.R., the inland transport of these materials to respective points along the line became a great difficulty due to the uncertain navigation along the Ganges.

But, as we have seen, all these difficulties were overcome. The E.I.R. came to traverse the Gangetic Valley by the early

seventies and as also did other railways in other parts of India in course of time. Even the initial period of the operation of the E.I.R. that we have reviewed in this book does show what the railways could offer to India. The industrial development as facilitated during our period was apparent in the rapid growth of the Burdwan coal-field. The movement of grain from one part of the country to another and to the port of Calcutta for foreign shipment was expanding in volume and this meant greater relief during famine conditions and economic enrichment of the grain-producing areas generally. Further expansion of railways and other communications in India in the succeeding years definitely stimulated similar developments in different parts of the country and the result has been undoubtedly most beneficial to her entire economic progress.

APPENDIX I¹

Capital subscribed in England for the East Indian Railway,

1848-49	£ 60,000
1849-50	£ 220,247
1850-51	£ 364,179
1851-52	£ 174,324
1852-53	£ 134,865
1853-54	£ 359,824
1854-55	£ 2,553,670
1855-56	£ 1,715,426
1856-57	£ 1,064,710
1857-58	£ 1,142,589
1858-59	£ 3,612,300
1859-60	£ 2,013,076

(Year ending 30th April)

1. The figures used in this table and also in the following ones have been taken mainly from the Reports submitted to the Secretary of State for India in Council on Railways in India for the relevant years and in a few cases, from Range 63, Vol. LXXII of the records of the Accountant General's Department. Although certain inaccuracies may be noticed in these records, these are the best available sources on the subject.

APPENDIX II¹**Capital subscribed in India for the East Indian Railway,**

1849-50	£ — — — —
1850-51	£ 31,796
1851-52	£ 21,516
1852-53	£ 4,673
1853-54	£ 5,715
1854-55	£ 84,492
1855-56	£ 38,630
1856-57	£ 28,966
1857-58	£ 12,927
1858-59	£ 4,581
1859-60	£ 5,917

1. The years given here may not in all cases correspond exactly to the then official year from 1 May to 30 April.

APPENDIX III¹**Receipts from the East Indian Railway,**

1855	£ 10,631
1856	£ 48,412
1857	£ 69,484
1858	£ 87,724
1859	£ 109,403
1860	£ 372,173
1861	£ 214,580
1862	£ 281,000
1863	£ 382,009
1864	£ 500,727
1865	£ 772,099
1866	£ 1,080,885
1867	£ 1,172,693
1868	£ 1,002,047

(Year ending 30 June)

1. This statement and the following ones have been to the nearest £ — fractions being ignored.

APPENDIX IV

Receipts from the East Indian Railway, 1868—1879.

1868	£ 1,237,946 ¹
1869	£ 1,455,170
1870	£ 1,549,627
1871	£ 1,380,380
1872	£ 1,553,296
1873	£ 1,686,337
1874	£ 2,196,887
1875	£ 1,624,331
1876	£ 2,110,379
1877	£ 2,770,667
1878	£ 2,344,942
1879	£ 2,665,751

(Year ending 31 December)

1. The figures for 1868 apply only from the 1st April to 31st December, 1868.

APPENDIX V

Amount of Guaranteed Interest paid in England to the East Indian Railway Co., 1849-50—1858-59.

1849-50	£ 5,601
1850-51	£ 17,471
1851-52	£ 35,761
1852-53	£ 44,701
1853-54	£ 50,930
1854-55	£ 87,221
1855-56	£ 190,600
1856-57	£ 285,070
1857-58	£ 349,295
1858-59	£ 422,302

(Year ending 30 April)

Interest paid in England between 1 May and 31 December, 1859—£ 541,147.

APPENDIX VI

Amount of Guaranteed Interest paid in India to the East Indian Railway Co., 1851-52—1858-59.

1851-52	£ 1,423
1852-53	£ 532
1853-54	£ 1,140
1854-55	£ 1,662
1855-56	£ 5,129
1856-57	£ 12,319
1857-58	£ 5,214
1858-59	£ 11,665

(Year ending 30 April)

APPENDIX VII

**Amount of Guaranteed Interest paid in England and India to
the East Indian Railway Co., 1860-1879.**

1860	£ 666,870	1871	£ 1,460,501
1861	£ 815,081	1872	£ 1,503,378
1862	£ 927,555	1873	£ 1,502,008
1863	£ 986,965	1874	£ 1,499,120
1864	£ 1,057,448	1875	£ 1,497,927
1865	£ 1,161,812	1876	£ 1,467,311
1866	£ 1,203,019	1877	£ 1,489,234
1867	£ 1,289,628	1878	£ 1,492,806
1868	£ 1,395,432	1879	£ 1,496,647
1869	£ 1,460,503		
1870	£ 1,493,242		

(Year ending 31 December)

